News about

B. F. Goodrich Chemical *raw materials*

HYCAR 1312

practical polymer, proved plasticizer

Check these three proved uses:

Hycar 1312... a *liquid* nitrile polymer . . . mixes and compounds readily without the need for costly equipment . . . cures to medium or hard state using regular compounding ingredients . . . has excellent resistance to oil, grease, solvents.

Hycar 1312... a nitrile rubber plasticizer . . . non-migrating, non-extractable...non-volatile...contributes to better flow, extrusion, and calendering of nitrile rubber stocks . . . produces roll building compounds with excellent tack and knitting characteristics.

Relatively small amounts of Hycar 1312 in the recipe will sharply reduce the viscosity of uncured compounds . . . an effect useful in producing nitrile sponge and friction compounds.

Hycar 1312... a polymeric-type plasticizer for vinyl plastisol compounding . . . produces excellent, dimensionally stable pressure-blown sponge at expansion temperatures of 300-305° F. without surface cracking . . . produces finished products of excellent physical characteristics.

Hycar 1312 and its many unique advantages are completely described in a new bulletin just released. Please write Dept. CJ-6, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio. Cable address: Goodchemco. In Canada: Kitchener, Ontario.

B. F. Goodrich Chemical Company
A Division of The B. F. Goodrich Company

Hycar Reg. U.S. Pat. Off.
American Rubber

GEON polyvinyl materials • HYCAR American rubber and latex • GOOD-RITE chemicals and plasticizers • HARMON colors

New Recipes for Better Rubber Products from PHILBLACK® Research!

"Some like it hot . . . some like it cold!" Rubber, one of the most versatile of materials, can be compounded to provide widely varying characteristics. Some manufacturers need high hot tensile . . . others are more concerned with hysteresis. Still others must have hardness, abrasion resistance, good electrical conductivity, processability . . . or combination of these qualities. What are *your* specific requirements?

Whatever your needs, Philblack can help. The four Philblacks, each with its individual characteristics, give desirable adaptability in rubber recipes.

For years Phillips experts have been working with carbon blacks and rubber, trying different recipes to achieve specified results . . . checking the effects of aging, abrasion and flexing on rubber products . . . discovering and improving methods of processing.

This backlog of knowledge is available to Phillips customers. For full information about the Philblacks and for expert, practical advice on your special problems, consult your Philblack representative.

Know the Philblacks!

KNOW WHAT THEY'LL DO FOR YOU!

A **Philblack A FEF Fast Extrusion Furnace Black**
Ideal for smooth tubing, accurate molding, satiny finish. Mixes easily. High, hot tensile. Disperses heat. Non-staining.

I **Philblack I ISAF Intermediate Super Abrasion Furnace Black**
Superior abrasion resistance at moderate cost. Very high resistance to cuts and cracks. More tread miles at high speeds.

O **Philblack O HAF High Abrasion Furnace Black**
For long, durable life. Good electrical conductivity. Excellent flex. Fine dispersion.

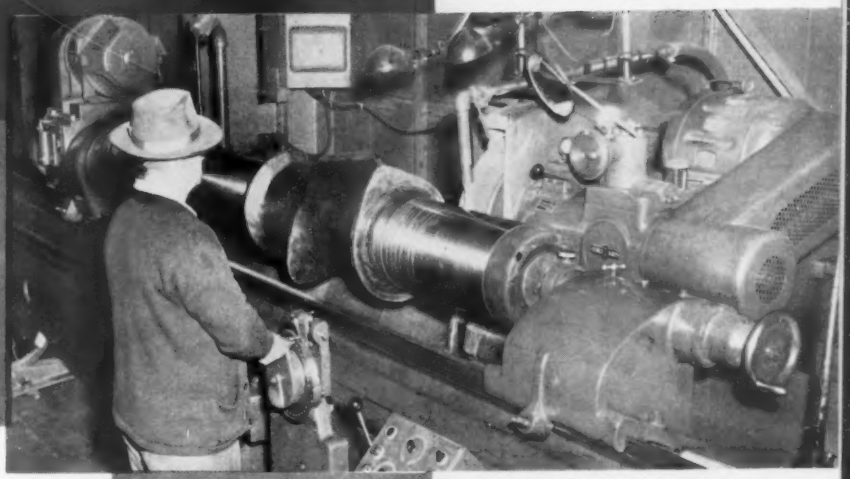
E **Philblack E SAF Super Abrasion Furnace Black**
Toughest black on the market. Extreme abrasion resistance. Withstands aging, cracking, cutting and chipping.

Phillips 66

PHILLIPS CHEMICAL COMPANY, Rubber Chemicals Division, 318 Water St., Akron 8, Ohio. Export Sales: 80 Broadway, New York 5, N. Y. West Coast: Harwick Standard Chemical Company, Los Angeles, California. Canada: H. L. Blachford, Ltd., Montreal and Toronto.

BANBURY Repair Service

Our Big Shop Has COMPLETE TOOLING for Topnotch Work



Size 11 Rotor in grinder receiving final finish on collars, journals and gear bits.

When you need **Banbury** repair parts or rebuilding service, remember . . . you have a service practically at your back door.

The big **Aetna-Standard** shop in Warren, Ohio, has been completely tooled up for welding, machining, grinding and assembly of parts and complete chambers. Special tools and fixtures assure interchangeability.

Precision machinery for the steel industry has been built in this same shop for many years. Most of the machinists are from the older school of apprenticeship and take great pride in their work, an important factor in skillful **Banbury** rebuilding.

When **Hale and Kullgren** announced their entry into the rubber and plastic machinery business four years ago, many friends said in effect—"I hope you intend to repair and rebuild **Banburys**. We need a service close to us."

In those four years, the Warren Plant has been busy with **Banbury** orders. Many midwest companies prefer the "close-to-home" service so they can control progress of the work. They also like the personal treatment. Their maintenance men can follow the work closely in the shops and keep check on the progress of the work.

Pair of sides in vertical boring mill having circular keys cut to original radius and size. NOTE: Each side is mounted in special fixture duplicating register in end frames.

Pair of sides mounted in planer having door rails recut to exact distance from rotor center

- *We build parts to original patterns.*
- *New Ideas in Banburys.*
- *Parts Interchangeable.*
- *Swap Service Available.*
- *Many Parts in Stock.*
- *Good Service.*

Sales and Engineering by

HALE and KULLGREN, INC.

P. O. Box 1231 - AKRON, OHIO

MANUFACTURED BY

THE AETNA-STANDARD ENGINEERING CO., PITTSBURGH, PA.

PLANTS IN WARREN, OHIO - ELLWOOD CITY, PA.

We have patterns and can supply any part . . . we stock most of them

AN EXTRA MEASURE OF PROTECTION

is assured with Wing-Stay S

STOPPING one of rubber's arch enemies – oxidation – has long been a problem for compounders. New and better antioxidants and more accurate methods of evaluating their effectiveness are under constant development.

One of the more recently developed methods is the "creep" test. In this test, the elongation with time of a rubber ring under constant heat and stress is measured. This "creep" indicates the relative stress decay of the sample. This test is currently considered the most reliable yet developed, particularly for vulcanizates of the styrene-type rubbers.

And it is in the "creep" test that both "hot" and "cold" rubbers protected with WING-STAY S, exhibit up to 15 times more age-resistance than when not protected. These same rubbers also appear up to three times more stable than when protected with another nonstaining antioxidant.

WING-STAY S is a liquid phenol-styrene copolymer. It specifically and effectively retards the detrimental action of oxygen. It is easily incorporated and highly resistant to heat, sunlight and extraction by water. It protects against degradation without odor, migration or discoloration.

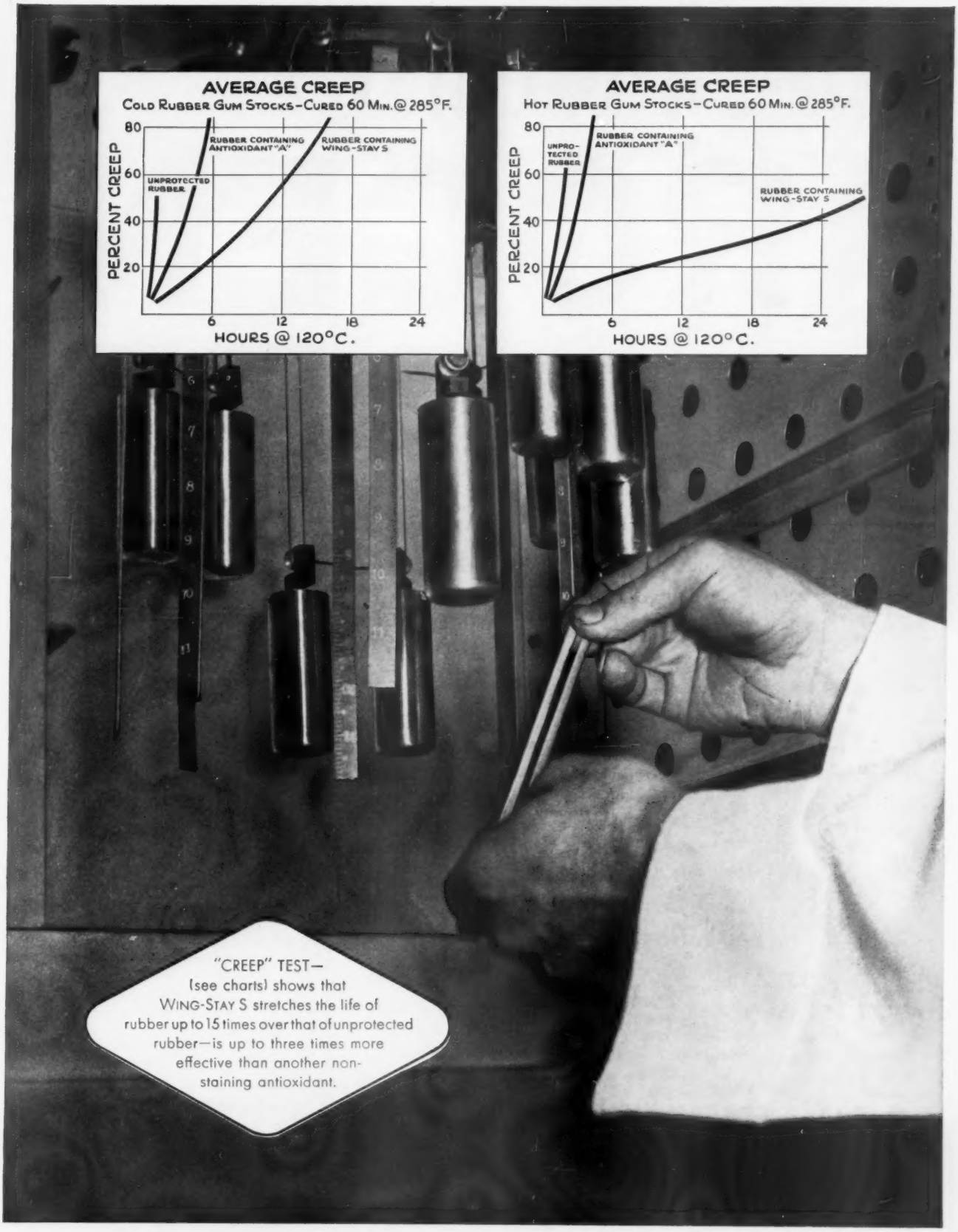
Details on the PLIOFLEX rubbers – the general-purpose synthetics now manufactured by Goodyear –protected by WING-STAY S, or on WING-STAY S for incorporation in other rubbers, are yours by writing to:

Goodyear, Chemical Division, Akron 16, Ohio

CHEMICAL GOODYEAR DIVISION

Chemigum, Pliobond, Plioflex, Pliolite, Plio-Tuf, Pliovic, Wing-Stay — T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

WING-STAY S—another quality product of Goodyear Chemical Division



A New Low-Cost Huber Oil Furnace Black

AROGEN GPF

(General Purpose Furnace Black)

Arogen GPF combines the best features of oil furnace blacks—high tensile and high tear properties, good reinforcement—with excellent processing characteristics...and all at low cost.

Arogen GPF is an all-around utility black, equally good for tires and mechanical goods, with reinforcing properties superior to SRF grades.

Commercial quantities of *Arogen GPF* are available now. Write today for working samples.

J. M. HUBER CORPORATION HUBER

100 PARK AVENUE • NEW YORK 17, N. Y.

Manufacturers of Furnace Blacks, Channel Blacks, Rubber Clays, Rubber Chemicals

AROMEX HAF • AROMEX ISAF • AROMEX CF • AROMEX SAF
WYEX (EPC) • MODULEX (HMF) • AROGEN (GPF) • COLLOCARBS
ARROW TX (MPC) • ESSEX (SRF) • AROVEL (FEF)

Rubber Age

COVERING THE MANUFACTURE OF RUBBER AND RUBBERLIKE PLASTICS PRODUCTS

Published Monthly by
PALMERTON PUBLISHING CO., INC.
Editorial and Advertising Offices
101 West 31st St.,
New York 1, N. Y.
PEnnsylvania 6-6872

P. L. PALMERTON, *President*
E. D. OSBORN, *Vice-Pres. and Sec'y.*
PETER P. PINTO, *Treasurer*
M. E. LERNER, *Assistant Treasurer*

STAFF

M. E. LERNER
Editor

B. J. KOTSHER
Associate Editor

KENNETH T. CORELL
Production Manager

ELLA MAY DARRIN
Circulation Manager

CHARLES T. JANSEN
Advertising Manager

PETER P. PINTO
General Manager

NEWS CORRESPONDENTS

CARL S. HOGLUND
5107 Telegraph Road, Los Angeles 22, Calif. — Phone: ANgelus 2-0177.

PHIL GLANZER
223 Coldstream Ave., Toronto 12, Ontario, Canada

ADVERTISING REPRESENTATIVES

New England
F. ROYAL CAREY
P. O. Box 133, Providence, R. I.

Chicago
LARRY M. LYONS
549 West Washington St., Chicago 6, Ill.—Phone: CEntral 6-0545.

SUBSCRIPTION RATES

	U.S.	Canada	Other
1 Year	$5.00	$5.50	$6.00
2 Years	7.50	8.50	9.50
3 Years	10.00	11.50	13.00

Single copies (up to 3 months) 50c
Single copies (over 3 months) 75c

CONTENTS

VOL. 77, NO. 3 **JUNE, 1955**

Some Recent Applications of Rubber-Base Adhesives—*By J. M. McClellan* 385
An expert takes a look at the growing industrial applications of rubber-base adhesives and discusses some of the more unusual uses. A definition of "adhesion" is also given.

Removal of Persons from Mill Rolls 390

The Effects of Conductor Temperature on the Quality of Extruded Vinyl Wire Insulation—*By E. E. Griesser and M. M. Suba* 391
Notable among the less obvious variables for proper insulation is the control of conductor temperatures during extrusion. Heat shock failures can be overcome by controlled temperature.

Black Light Solves Fuel Cell Coverage Problem 398

Comparison of Fine Particle Size Silica Pigments (Hi-Sils 101, 202 and 233)—*By Ralph F. Wolf and Curtis C. Stueber* 399
Results of direct comparisons in various elastomers, especially in soling compounds. Also includes data on replacement of silicate pigments with Hi-Sil 233 plus clay.

Questions and Answers on Rubber and Plastic Foams 405

REGULAR DEPARTMENTS

Book Reviews	446	Los Angeles News	432
Canadian News	434	Markets	450
Chemical Prices	454	Names in the News	426
Classified Ads	467	New Equipment	442
Coming Events	419	New Goods	438
Editorials	409	Obituaries	436
Financial News	428	Statistics	*

*Appears every other month

Microfilm copies of complete volumes of RUBBER AGE are available from: University Microfilms, 313 North First St., Ann Arbor, Mich.
Indexed in Industrial Arts Index and Engineering Index
Contents Copyrighted 1955

U. S. Rubber Company gets new Taylor "Robot Brain"

TAYLOR instruments have been a familiar sight in U. S. Rubber plants for many years, but recently a new face was added at the Detroit plant. It's Taylor's new FLEX-O-TIMER* Timed Program Controller, the latest contribution to greater precision of the timing and coordination of automatic tire presses where simple and precise settings are required.

This mechanical 'brain' automatically controls the sequence and duration of all functions of the Bag-O-Matic press shown above, from closing to opening of the press. Settings can be readily changed to accommodate different tire sizes, to switch from nylon to rayon cord, or for variations in compounding.

Increased set-up speed! It will handle from one to eight electrically or pneumatically operated functions—or any combination of both—and perform each function in exactly the same way time after time.

*Reg. U.S. Pat. Off.

The greatest advantage of this new instrument is that it makes possible direct time settings, for greater accuracy, speed and convenience. Program trip pins are manually positioned to the exact time at which a sequence is to be initiated. The step mechanism trip pins actuate the latch operators which in turn operate the process valves etc. to keep them in proper phase during the cure. Result—no operator computations necessary, precision of settings.

This new FLEX-O-TIMER Controller has now been in operation at this plant for several months. It has proved itself entirely satisfactory in meeting the exacting requirements of U. S. Rubber Company.

Ask your Taylor Field Engineer about the many plus values of this remarkably versatile new instrument, or write for **Catalog 98350.** Taylor Instrument Companies, Rochester, N. Y., or Toronto, Canada.

Taylor Instruments MEAN ACCURACY FIRST

Versatility is "DUCK SOUP" for...

TY•PLY®

NEW UP-RC

A TWO-COAT ADHESIVE SYSTEM WITH UNEXCELLED RESISTANCE TO Dynamic Fatigue!

for BONDING RUBBER-TO-METAL in the Manufacture of:

- **NEOPRENE OIL SEALS and MOTOR MOUNTS**
- **NATURAL RUBBER SHOCK ABSORBERS and PRESS ROLLS**
- **GR-S SOLID TIRES and PEDAL PADS**

Very suitable for natural rubber stocks (both normal and low-sulfur), standard and cold-polymerized GR-S's, polybutadiene, oil-modified GR-S, arctic-type GR-S and natural-GR-S blends.

TY-PLY "Q" or "3640"
for bonding Natural, GR-S, and Butyl

TY-PLY "BN"
for bonding N-types

TY-PLY "S"
for bonding Neoprene

TY-PLY will adhere most vulcanizable rubber compounds to almost any clean metal surface

Marbon®

MARBON CHEMICAL

Division of BORG-WARNER

GARY, INDIANA

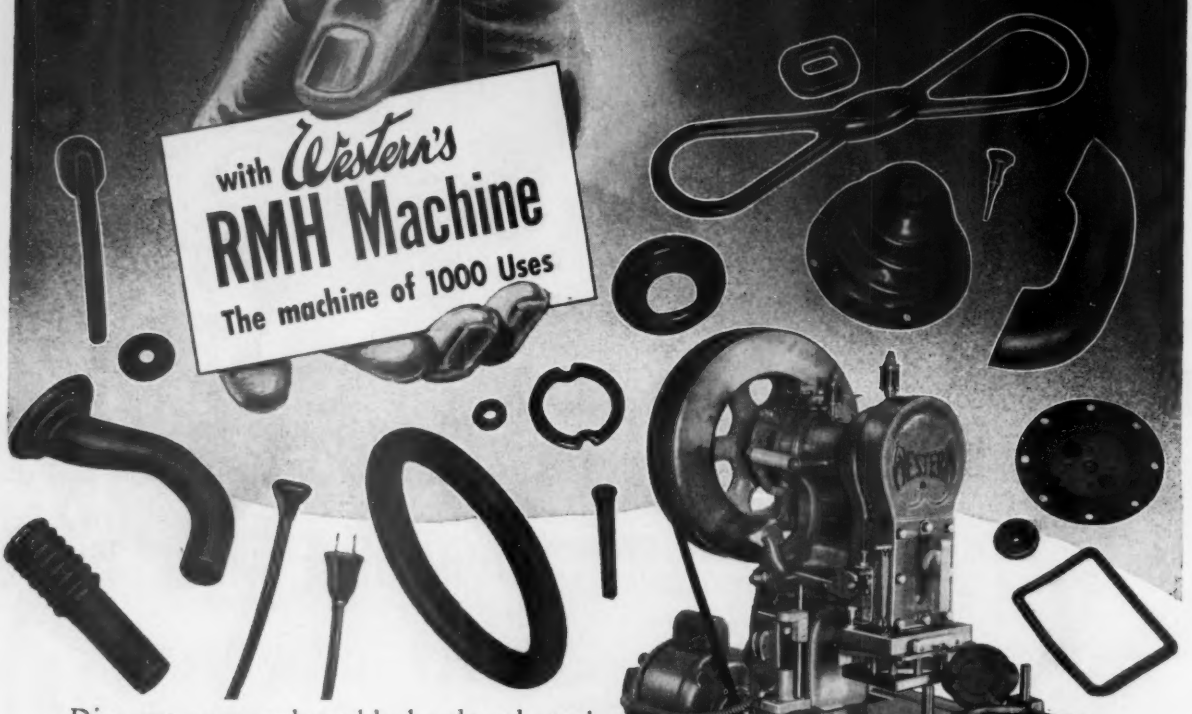
TY-PLY has stood the test of time . . . since '39

QUICK TRIM FLASHING

for as little as 1/4 your present cost!

with Western's **RMH Machine**

The machine of 1000 Uses

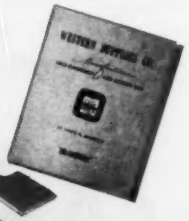


Dies cut on a replaceable hardened steel plate. Foot control speeds operation. Simple, positive pressure adjustment. Positive safety devices on machine. ½ H.P. motor.

Cuts, punches and trims flashing **in one swift operation!**

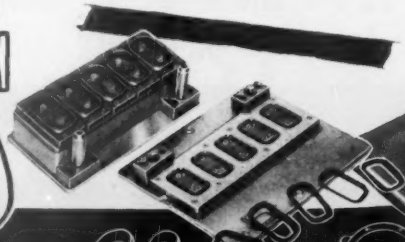
CUTS PARTS FROM SHEET STOCK SEND US A SAMPLE of parts to be cut or flash trimmed for our recommendations.

Send for our illustrated catalog



WE SPECIALIZE IN

DIES



WESTERN SUPPLIES CO., 2920 CASS AVE., SAINT LOUIS 6, MO.

does cold weather do strange things to your plastics?

then give your product low-temperature flexibility with Plastolein® 9058 DOZ!

If plastic products made from your film, sheeting or extrusions become stiff and wrinkled in cold weather, you may be freezing up a lot of reorders. Then getting better low temperature flexibility is the answer. And no plasticizer can provide this better than Plastolein 9058 DOZ (di-2-ethylhexyl azelate) or its companion, Plastolein 9057 DIOZ (di-iso-octyl azelate).

Not only do these azelate plasticizers provide unexcelled low-temperature performance, but they also possess low volatility, excellent heat and light stability, high efficiency, low water extraction, and extremely low soapy water extraction... all of which make these Plastolein Azelates the best all around low-temperature plasticizers available.

So, why not try Plastoleins 9058 DOZ or 9057 DIOZ in your product. The competitive advantages they give will mean greater consumer acceptance... greater sales to you. Write Dept. U-6 for literature or samples.

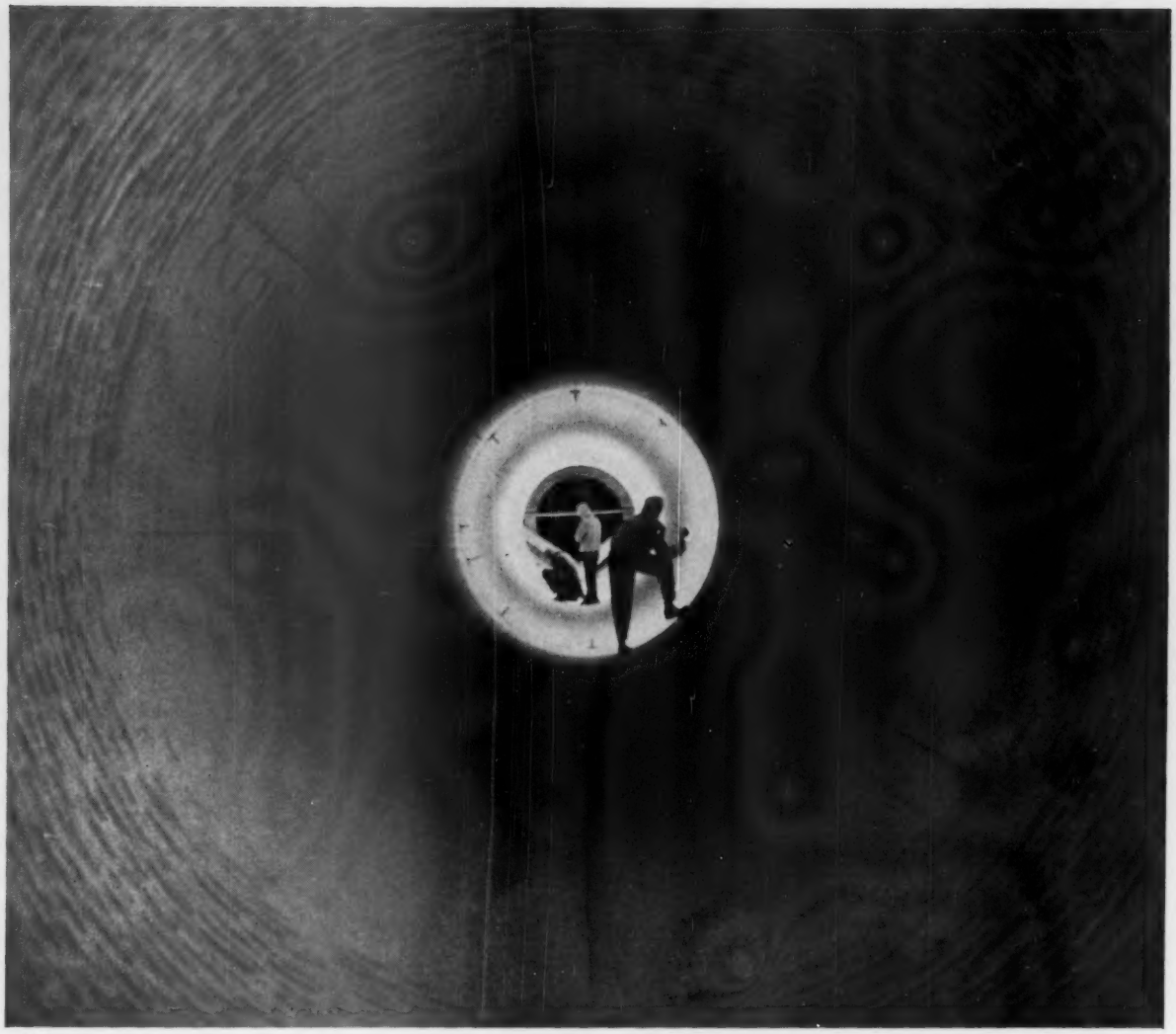
Be sure your plastics stay plastic . . . use Plastolein Plasticizers every time

Emery

Fatty Acids & Derivatives
Plastolein Plasticizers
Twitchell Oils, Emulsifiers

Emery Industries, Inc., Carew Tower, Cincinnati 2, Ohio

New York; Philadelphia; Lowell, Mass.; Chicago; San Francisco; Cleveland
Warehouse stocks also in St. Louis, Buffalo, Baltimore and Los Angeles • *Export: 2205 Carew Tower, Cincinnati 2, Ohio*



bull's-eye for quality

This huge calciner represents just one step in the TITANOX quality story. In this mammoth rotary kiln, titanium hydrate is converted to titanium dioxide. Here are developed, through careful heat treatment, the unique optical properties of TITANOX pigments—unsurpassed whitening, brightening and opacifying power.

Subsequent operations add to these optical properties such desirable qualities as ease of dispersion and freedom from coarse particles.

From the full lines of "pure" and composite TITANOX white pigments, you can select one or a combination to fit any of your pigmentation needs. Your TITANOX representative and our Technical Service Department are always ready to help you make the right choice. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; Atlanta 2; Boston 6; Chicago 3; Cleveland 15; Los Angeles 22; Philadelphia 3; Pittsburgh 12; Portland 9, Ore.; San Francisco 7. In Canada: Canadian Titanium Pigments Limited, Montreal 2; Toronto 1.

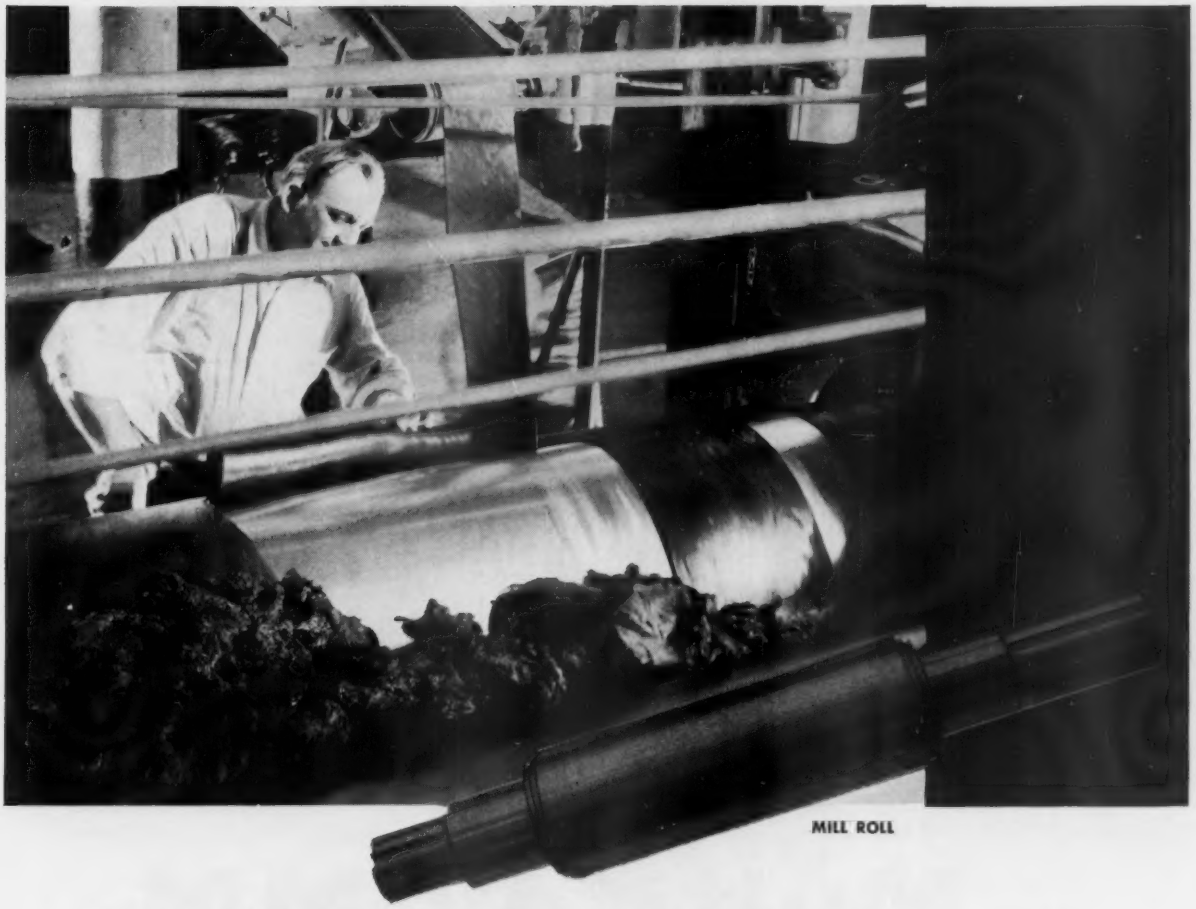
® TITANOX

the brightest name in pigments

2816-A

TITANIUM PIGMENT CORPORATION

Subsidiary of NATIONAL LEAD COMPANY



MILL ROLL

CONSIDER THESE FACTS

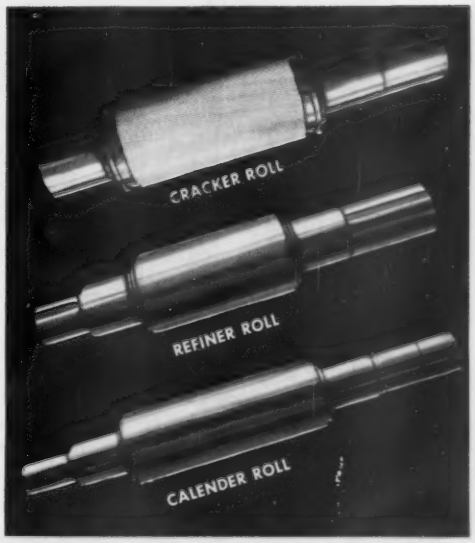
before you order replacement rolls

A CENTURY OF SERVICE to the rubber industry has given Farrel-Birmingham an unusual understanding of its requirements. Through the experience gained, the company has learned how to make rolls to fit your needs precisely.

Experience is the only answer to many of the problems that arise. It is of vital importance in determining the depth of chill and correct metal mixture to be used . . . in engineering a roll for proper temperature control . . . in figuring roll crown . . . or in designing the corrugations for washer or cracker rolls.

THE WORLD'S LARGEST SPECIALTY ROLL SHOP is equipped to make rolls of any size required, for any purpose, and in many different metal formulas of chilled iron, alloy iron, or Meehanite metal. At Farrel-Birmingham you will find specialized production facilities . . . quality control methods from metallurgical analysis of raw materials to final inspection of the finished roll . . . and men experienced in every phase of roll manufacture.

Write for information about rolls for specific applications.



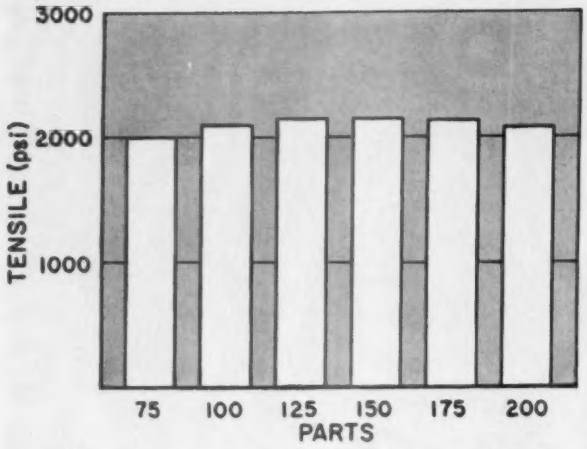
FB-912

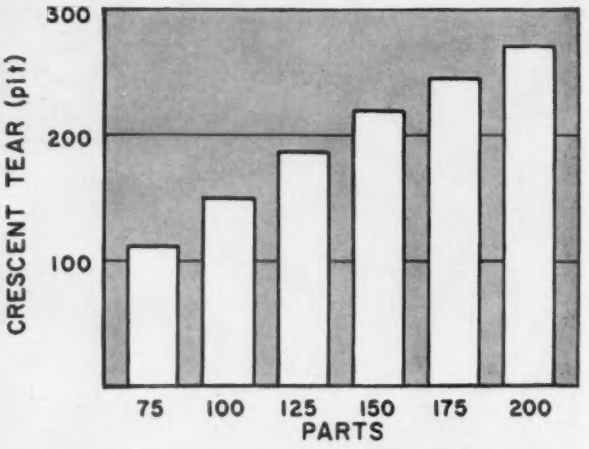
Farrel-Birmingham®

FARREL-BIRMINGHAM COMPANY, INC., ANSONIA, CONN.

Plants: Ansonia and Derby, Conn., Buffalo and Rochester, N.Y.
Sales Offices: Ansonia, Buffalo, New York, Akron, Chicago, Fayetteville (N.C.), Los Angeles, Houston

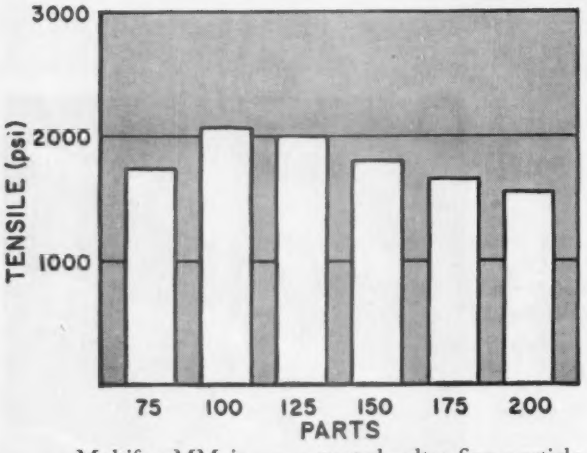
See how you can give GR-S high tear resistance / tensile strength with Super Multifex®

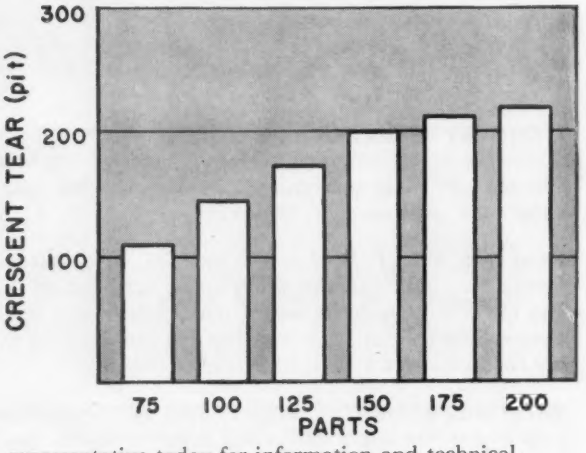




Use DIAMOND Super Multifex in your GR-S compounds for maximum tear resistance, high tensile strength, and excellent flex life. This precipitated calcium carbonate has extremely uniform, ultra-fine particles (.03-.04 microns), coated to aid dispersion, mixing and processing. Try it in your next order.

and Multifex® MM





Multifex MM is an uncoated, ultra-fine particle (.05–.06 microns) precipitated calcium carbonate. It reinforces GR-S by giving good tear resistance, tensile strength and flex life. Call your DIAMOND representative today for information and technical help on these and other high-grade calcium carbonates. Or write DIAMOND ALKALI COMPANY, 300 Union Commerce Building, Cleveland 14, Ohio.

DIAMOND SALES OFFICES: New York, Philadelphia, Pittsburgh, Cleveland, Cincinnati, Chicago, St. Louis, Memphis, Houston.

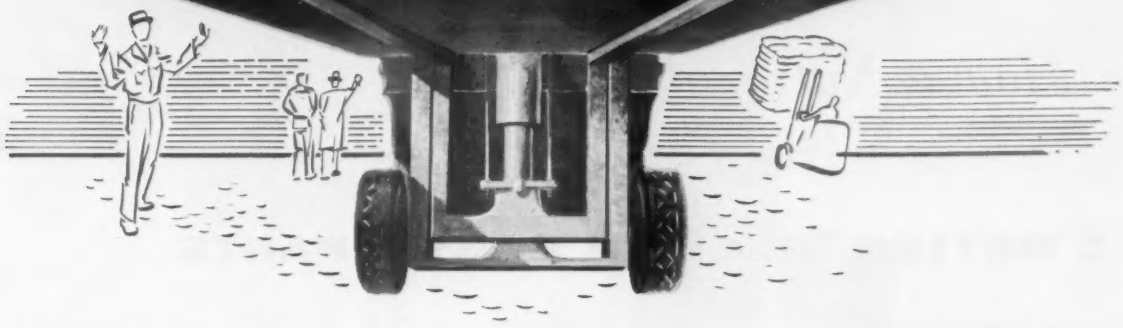
DISTRIBUTORS OF THESE PRODUCTS: C. L. Duncan Co., San Francisco and Los Angeles; Van Waters and Rogers, Inc., Seattle and Portland, U.S.A.; Harrisons and Crosfield, (Canada) Ltd.

DIAMOND ALKALI CHEMICALS®

Diamond Chemicals

Now on Sulphur

Handling Costs Lowered with Stauffer Sulphurs in Unit Loads



Today, there's an improvement over palletizing — unit loading, offered without extra charge.

A unit load starts with a paperboard sheet. On this, bags are stacked and lightly glued together to form a compact load, easily handled by conventional fork trucks. Savings are realized in the form of increased speed and safety of unloading, as well as in the greater convenience of warehouse storage and re-handling.

Contact any sales office of Stauffer for advice and further information on unit loading to suit your particular requirements. **Stauffer Chemical Company, 380 Madison Avenue, New York 17, N. Y.; 326 South Main Street, Akron 8, Ohio; sales offices in principal cities.**

Quicker, cheaper handling

No bulky pallets to return — paperboard sheets are disposable

Safer handling • Units up to 4000 pounds

BRANCH OFFICES

221 N. La Salle Street, Chicago 1, Ill. • 636 California Street, San Francisco 8, Calif.
824 Wilshire Boulevard, Los Angeles 14, Calif. • 8901 Hempstead Road, Houston 8, Texas • North Portland, Ore.

STAUFFER Stauffer CHEMICALS CHEMICALS

SINCE 1885

How a National-Standard wire development took

A BETTER "REEF" IN BABY'S PANTS

● Almost any product can be made better. Take safety pins.

A prominent manufacturer came to National-Standard with this idea: "Give us," he said, "a polished wire that needs no plating, yet won't corrode . . . a better, stronger, springier wire to which we can attach a plastic head."

A National-Standard research team took on the problem . . . and produced a special stainless steel wire with a mirror finish that needed no further polishing. They gave it magnetic properties so that bits of steel could be easily removed from the plastic compound used for heads . . . to protect costly dies and equipment. They gave it a special temper that made it springier, tougher, yet still easy to form.

Thousands of manufacturers have learned to depend on National-Standard for development and manufacture of special types of wire, wire cloth and strip steel . . . fussy, hard-to-make products that many companies hesitate to tackle. Why not give us a call and see what we can do for *you*.

NS NATIONAL-STANDARD Company NILES, MICHIGAN

NATIONAL-STANDARD COMPANY • NILES, MICHIGAN
Tire Wire, Stainless, Fabricated Braids and Tape
ATHENIA STEEL DIVISION • CLIFTON, N. J.
Flat, High Carbon, Cold Rolled Spring Steel
REYNOLDS WIRE DIVISION • DIXON, ILLINOIS
Industrial Wire Cloth
WAGNER LITHO MACHINERY DIVISION • JERSEY CITY, N. J.
Special Machinery for Metal Decorating
WORCESTER WIRE WORKS DIVISION • WORCESTER, MASS.
Round and Shaped Steel Wire, Small Sizes

Use
United Blacks

KOSMOS BRANDS

UNITED CARBON COMPANY, INC.

Kosmos 50, Fast Extrusion Furnace Black (FEF), appeals most to compounders coping with processing and reinforcement problems.

Kosmos 50 is peer among blacks when extrusion needs are greatest. It tubes fast, smooth, true to gauge and is consistent.

Kosmos 50 has strength. It is a "natural" for stepping up the processing and reinforcement of lesser reinforcing blacks. It blends perfectly with upper abrasion level blacks and eases their processing.

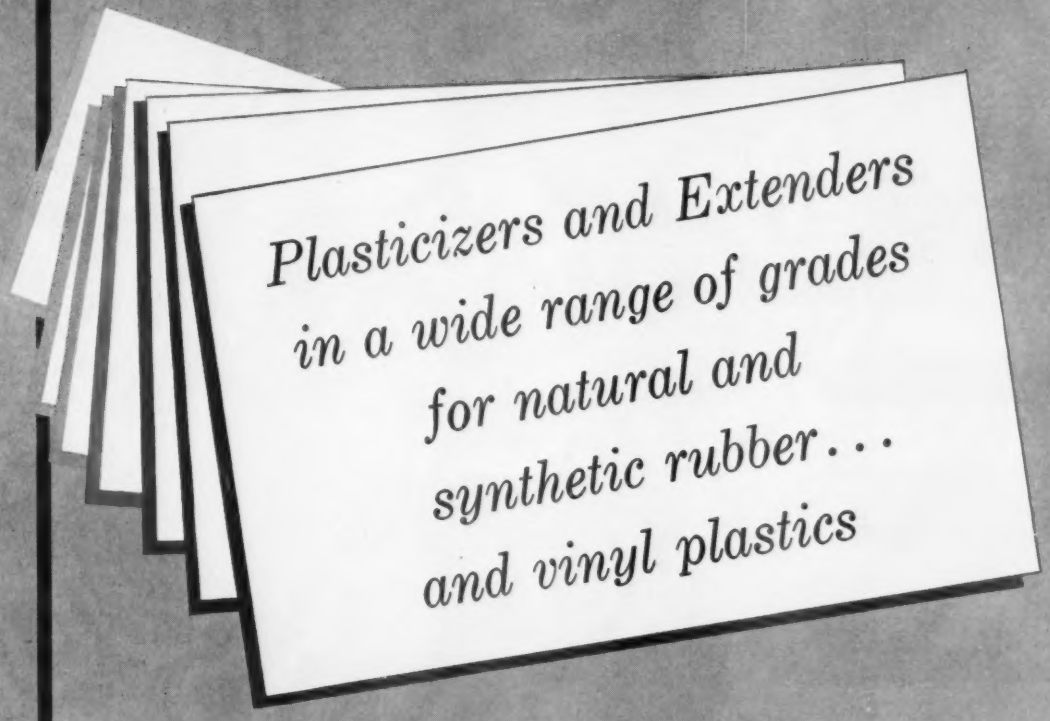
For blacks with quality distinction go UNITED. Leaders in the rubber industry bank on UNITED blacks. Stay with them.

UNITED CARBON COMPANY, INC.

CHARLESTON 27, WEST VIRGINIA

NEW YORK AKRON CHICAGO BOSTON MEMPHIS

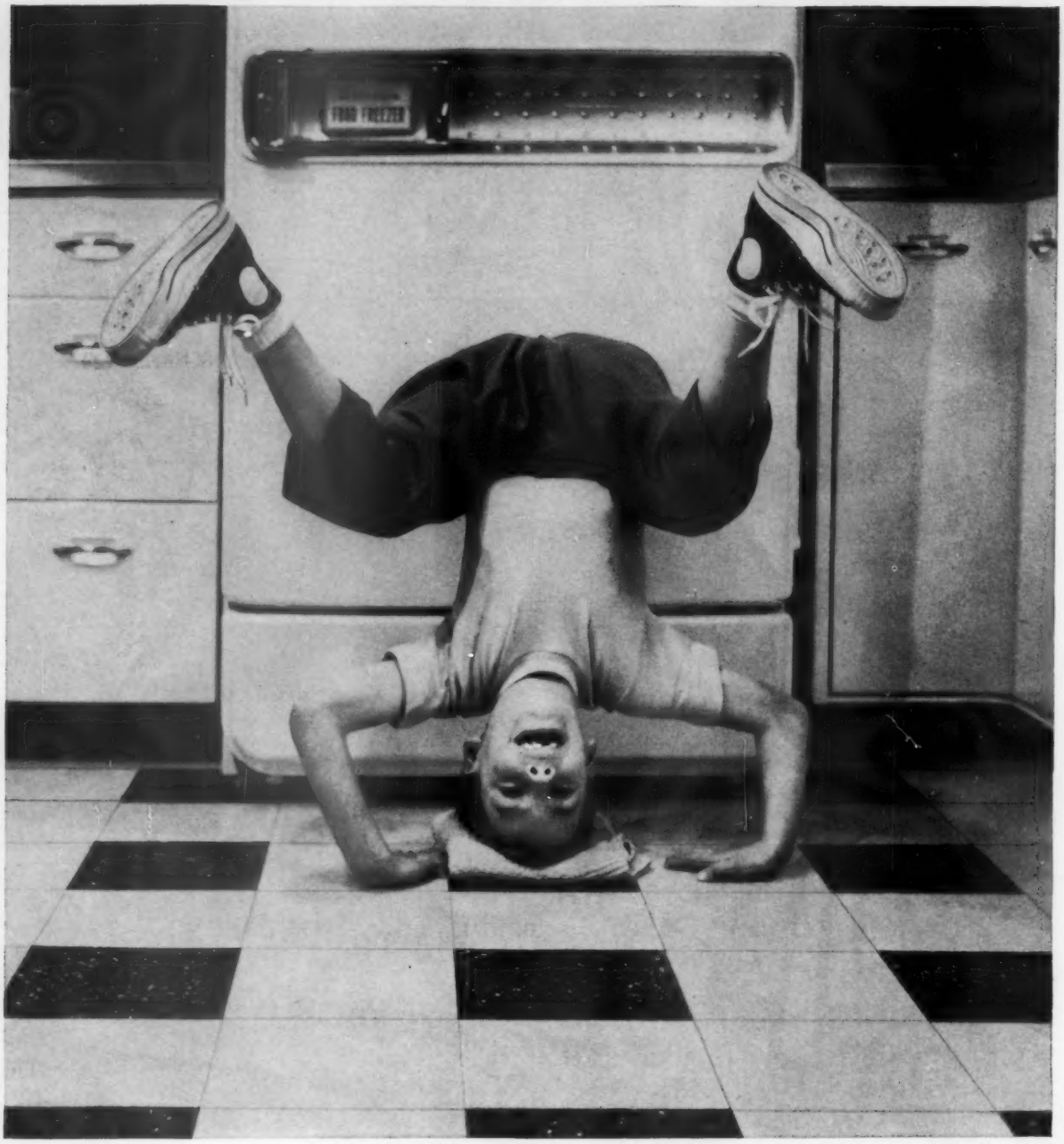
SHELL DUTREX



SHELL OIL COMPANY

50 WEST 50th STREET, NEW YORK 20, NEW YORK
100 BUSH STREET, SAN FRANCISCO 6, CALIFORNIA

SHELL



Easy does it with **SOLKA-FLOC!**

If you manufacture floor tile, rubber soles, or any other rubber product, you can do it faster and easier with SOLKA-FLOC.

Reduced blistering and nerve . . . better dispersion . . . controlled shrinkage . . . high dimensional stability . . . sharper designs . . . harder, smoother surfaces — SOLKA-FLOC works many different ways to give you a better finished product.

A finely-divided wood cellulose, SOLKA-FLOC will speed up your production, improve your product, increase your profits.

For samples and careful consideration of your specific processing problems, write Dept. FG-6, our Boston office, and one of our representatives will call on you.

BROWN COMPANY, Berlin, New Hampshire

General Sales Office:
150 Causeway Street, Boston 14, Mass.

SOLKA PULPS • SOLKA-FLOC • NIBROC PAPERS
NIBROC TOWELS • NIBROC KOWTOWLS • NIBROC TOILET TISSUE • BERMICO SEWER PIPE AND CONDUIT • ONCO INSOLES • CHEMICALS

the ideal hot-weather combination

in Channel Black Stocks and Stocks with Low Black Loadings

DPG and MBTS

for low-cost acceleration . . .
good processing . . .
high modulus values in
vulcanized rubber

plus . . . RETARDER PD

for processing safety under
hot-weather conditions . . .
effective protection against
scorching

For full information and samples, contact our sales representatives listed below.

SALES REPRESENTATIVES AND WAREHOUSE STOCKS: Akron Chemical Company, Akron, Ohio • Ernest Jacoby and Company, Boston, Mass. • Herron & Meyer of Chicago, Ill. • H. M. Royal, Inc., Los Angeles, Calif. • H. M. Royal, Inc., Trenton, N. J. • In Canada: St. Lawrence Chemical Company, Ltd., Montreal and Toronto

Calco®

AMERICAN Cyanamid COMPANY

INTERMEDIATE & RUBBER CHEMICALS DEPARTMENT

BOUND BROOK, NEW JERSEY

DUREZ

RESINS IN GRS

GO A LONG WAY

. . . in opening new markets for YOU

When you increase abrasion resistance in shoe sole stocks by incorporating Durez phenolic resins with GRS, you give people longer wear for their money — build up brand acceptance — broaden your market for these compounds.

For shoe soles and other GRS applications such as top lifts, Durez resins bring other important advantages. Although used in small amounts, they serve as effective plasticizers during processing. They also contribute strongly to stiffness or boardness, and produce a Shore A hardness of 90 to 100. These properties are retained at elevated temperatures due to the thermosetting nature of the resins.

Even greater effectiveness of the Durez resin can be obtained with GRS stocks by using small amounts of nitrile rubber. The nitrile acts as a common solvent or flux and greatly increases compatability of the resin.

OUR LATEST BULLETIN on resins in the rubber industry contains technical information, practical suggestions, and formulae. Stocks of many types are covered — as well as solvent cements and latices. Ask for a copy today.

DUREZ PLASTICS & CHEMICALS, INC.

106 Walck Road, North Tonawanda, N. Y.

Phenolic Resins for
rubber molding stocks,
solvent-type adhesives,
synthetic rubber latices

DUREZ

PHENOLIC RESINS

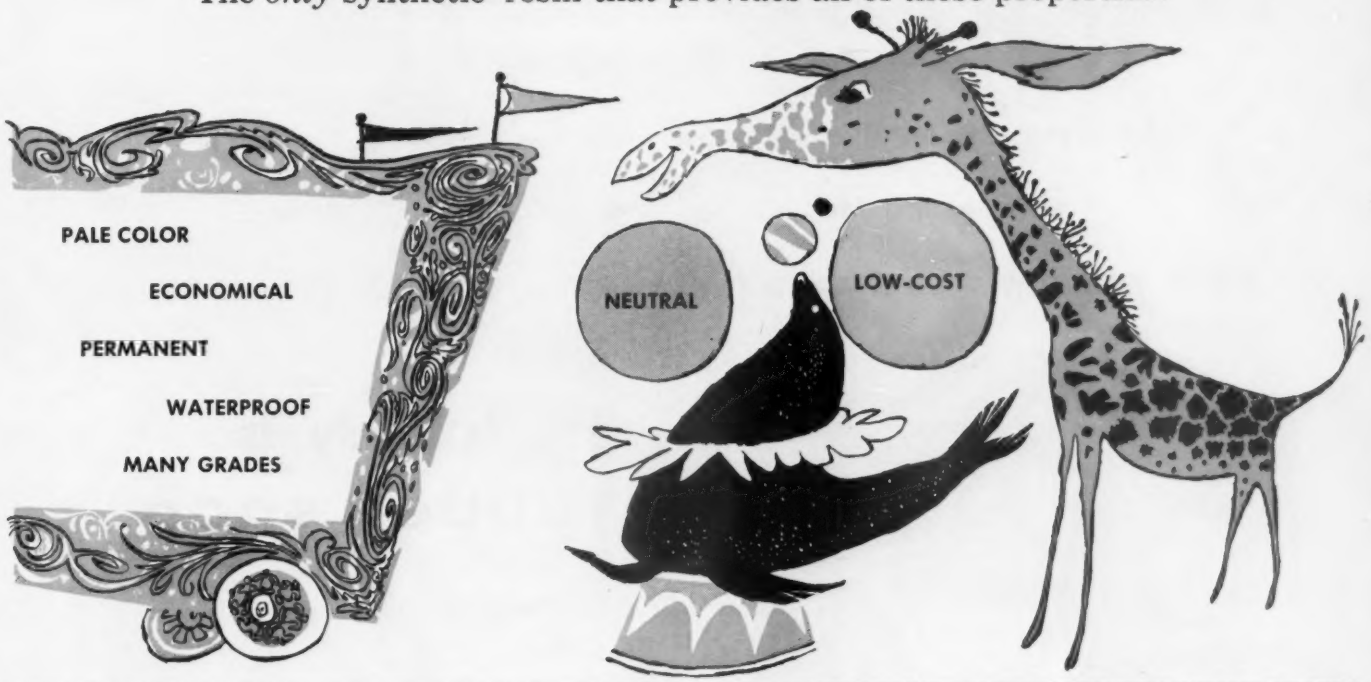
- MOLDING COMPOUNDS
- INDUSTRIAL RESINS
- PROTECTIVE COATING RESINS

The low-cost resin

with SEVEN *outstanding advantages*

PICCOLYTE

The *only* synthetic resin that provides all of these properties:



PALE COLOR—Exceptionally light-colored hydrocarbon resin

NEUTRAL—Low acid number—unsaponifiable

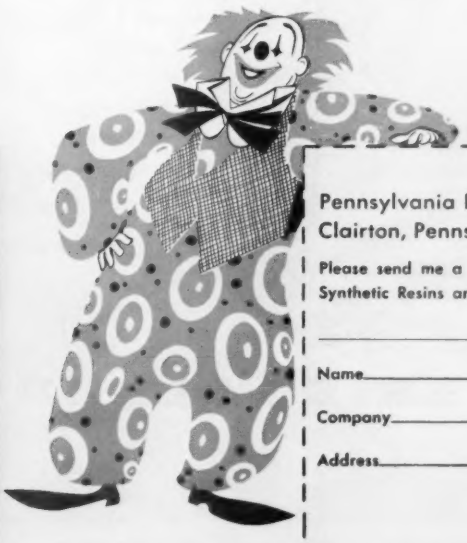
ECONOMICAL—Low in first cost and soluble in low-cost petroleum solvents

LOW-COST—Made by modern process that permits low selling price

PERMANENT — Stable and non-yellowing — unaffected by alkalies and salts

WATERPROOF—Piccolyte resins are unaffected by water or moisture

MANY GRADES—Standard and special grades in melting points from 10° C to 135° C



Pennsylvania Industrial Chemical Corp.
Clairton, Pennsylvania

Plants at:
Clairton, Pa.; West Elizabeth, Pa.; and Chester, Pa.

District Sales Offices
New York, Chicago, Philadelphia, Pittsburgh, Detroit

Distributed by
HARWICK STANDARD CHEMICAL CO., AKRON 5, O.

PICCO

Pennsylvania Industrial Chemical Corp. (RA)
Clairton, Pennsylvania

Please send me a copy of your bulletin describing PICCOLYTE Synthetic Resins and samples of grade for (application)_____

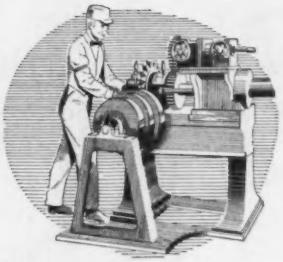
_____

Name_____ Position_____

Company_____

Address_____

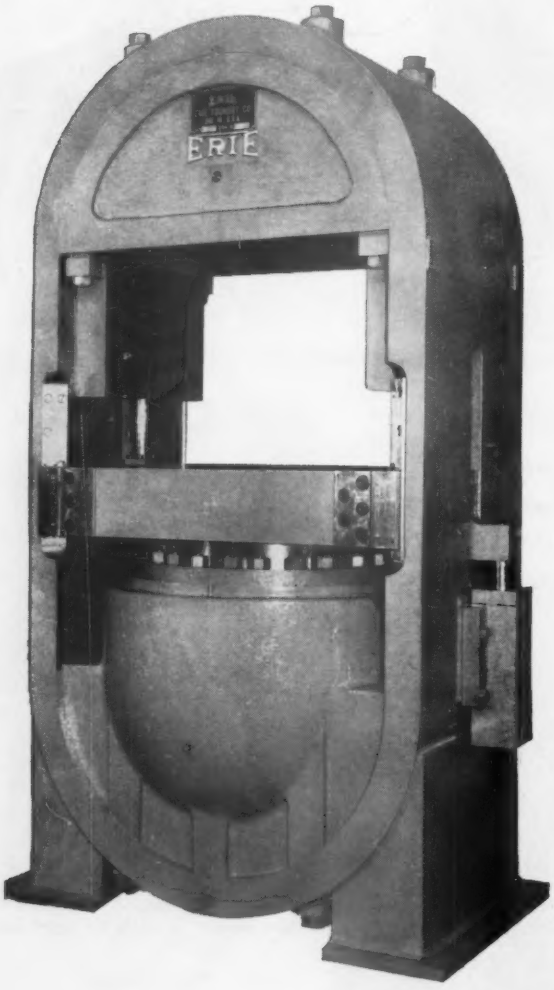
In the good old days



WHEN GRANDPA RAN THIS EXTRUDER

WHEN Germany was the world's largest exporter of rubber goods . . . when South America was the largest exporter of crude rubber which was then called Para . . . . . when the first Malaya plantation yielded crude rubber

ERIE FOUNDRY WAS A GREAT NAME IN HYDRAULIC PRESSES



in today's rubber shop

...when low stress insures minimum deflection

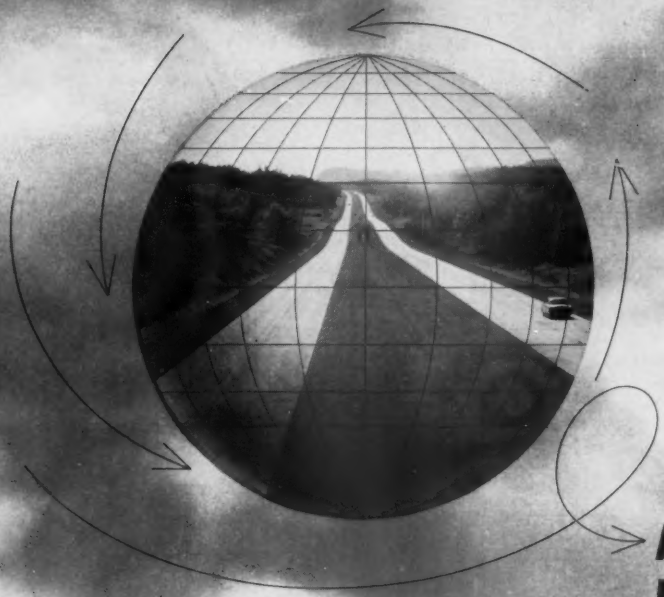
...when high pressures evenly applied to practically deflection-free (within .002 inches) platens guarantee thin flash lines

...when competitive bidding demands maximum service for minimum cost

ERIE

is by far the greatest name in special precision hydraulic presses

IN OUR 60TH YEAR **ERIE FOUNDRY CO. ERIE, PA.**



AROUND THE WORLD MILEAGE

CABOT

CHANNEL
FURNACE
THERMAL
CARBON
BLACKS

CHANNEL BLACKS: Spheron 9 EPC, Spheron 6 MPC, Spheron 4 HPC, Spheron C CC;

FURNACE BLACKS: Vulcan 9 SAF, Vulcan 6 1SAF, Vulcan 3 HAF, Vulcan SC SCF, Vulcan C CF, Sterling 99 FF, Sterling SO FEF, Sterling V GPF, Sterling L HMF, Sterling LL HMF, Sterling S SRF, Pelletex SRF, Pelletex NS SRF, Sterling NS SRF;

THERMAL BLACKS: Sterling FT, Sterling MT, Sterling MT-NS.

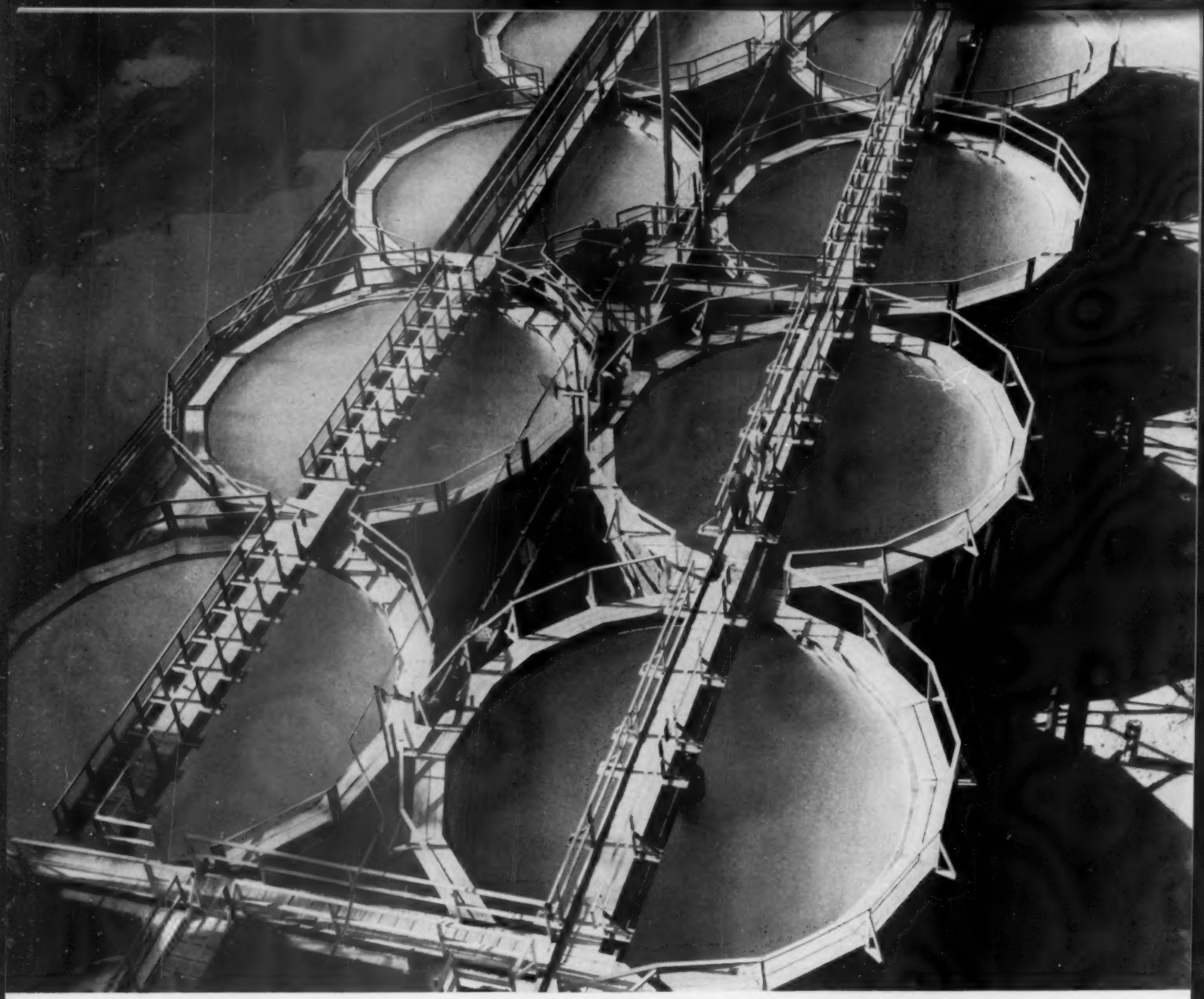
For MAXIMUM RUBBER MILEAGE, whether in tires or in other rubber goods, Cabot offers the best quality, greatest variety of carbon blacks available. As the world's only manufacturer of a complete range of channel, furnace and thermal blacks, Cabot is able to offer a black to satisfy your every rubber requirement. That's why leading manufacturers of all types of rubber products continue to specify Cabot. For best carbon black performance, ask for . . .

SPHERON *Channel Blacks*

VULCAN *Furnace Blacks*

STERLING *Furnace and Thermal Blacks*

GODFREY L. CABOT, INC. 77 FRANKLIN ST., BOSTON 10, MASS.



Mathieson Caustic Soda: *why settle for less?*

In the lime-soda process—one of the two important methods of making caustic soda—the causticizing operation begins in huge settling tanks like those above. Here, a soda ash solution is treated with milk of lime, calcium carbonate is precipitated and a dilute caustic liquor obtained. This liquid is then filtered and concentrated to the commercial 50% and 73% solutions, as well as to the solid, flake, and granular forms. Lime-soda process caustic is produced at Lake Charles, La., and Saltville, Va.; four other strategically located plants produce electrolytic process caustic to make Mathieson a major source of this essential chemical raw material.

Multiple-process and multiple-plant facilities give Mathieson's caustic soda customers the dependability they want. It means their source of caustic is not controlled by seasonal fluctuations in chlorine demand as is sometimes the case when production is limited to the electrolytic caustic-chlorine process. This operational flexibility is also typical of other Mathieson chemicals—5 chlorine plants, 7 sulphuric acid plants, 3 alkali plants, 3 ammonia plants, provide a safety factor that assures a reliable source of chemical raw materials.

Call on us when planning current or future chemical requirements. Perhaps you can buy to better advantage from one of America's largest producers of basic industrial chemicals.

MATHIESON CHEMICALS

OLIN MATHIESON CHEMICAL CORPORATION

INDUSTRIAL CHEMICALS DIVISION • BALTIMORE 3, MD.

2761

MATHIESON

CAUSTIC SODA • SODA ASH • CHLORINE • SULPHURIC ACID • SULPHUR • AMMONIA • NITRATE OF SODA • BICARBONATE OF SODA • NITRIC ACID • SULPHATE OF ALUMINA • SODIUM CHLORITE PRODUCTS
ETHYLENE OXIDE • ETHYLENE GLYCOL • DIETHYLENE GLYCOL • TRIETHYLENE GLYCOL • POLYGLYCOLS • DICHLOROETHYLETHER • ETHYLENE DICHLORIDE • METHANOL • SODIUM METHYLATE • ETHYLENE DIAMINE

Do you have a plasticizer cost problem?

Let PITTSBURGH offer you some Real Savings

HERE'S a new Pittsburgh development to help you reduce plasticizer costs without sacrificing plasticizer quality. Pittsburgh now offers you a blend of one-third Pittsburgh PX-114 (Decyl Butyl Phthalate) and two-thirds Pittsburgh PX-118 (IsoOctyl Decyl Phthalate). This blend provides almost exactly the same desirable properties as DOP—but at appreciably lower cost.

Pittsburgh Coke & Chemical has developed a number of these blends as a part of its continuing effort to provide you with better plasticizers at lower cost. We'll gladly help you explore the possibility of using blends to improve quality and reduce costs in production at your plant. If such savings are possible, we'll blend to your specifications in tank truck or tank car quantities.

Let's tackle *your* plasticizer cost problems. Call or write us *today!*

LOOK AT THIS PROPERTY COMPARISON

Property comparison below is based on 100 parts resin, 54 parts plasticizer and 3 parts stabilizer in each formulation.

	DOP	⅓-114 ⅔-118
Modulus (100%)	1600	1670
Shore Hardness (10 Sec.)	78	80
Clash-Berg, Tf, oC.	—26°C	—25°C
A. C. Volatility (24 hrs./90°C)	5.0	5.0
Oil Extraction (7 days/25°C)	1.4	1.5
Gasoline Extraction (1 hr./25°C)	14.3%	12.0%
Silicic Acid Test (24 hrs./60°C)	4.5	4.4
Tensile Strength	3100	3050
Ultimate Elongation	370	380

PLASTICIZER DIVISION
PITTSBURGH
COKE & CHEMICAL CO.
Grant Building • Pittsburgh 19, Pa.

WAD 8484

COAL CHEMICALS • AGRICULTURAL CHEMICALS • FINE CHEMICALS • PROTECTIVE COATINGS • PLASTICIZERS • ACTIVATED CARBON • COKE • CEMENT • PIG IRON

are TACKY compounds costing YOU TIME and MONEY?

Here's how you can eliminate tack and get added benefits as well.

Use Polymel DX as a plasticizer in proportions ranging from 5 to 35 parts on the rubber and processing problems resulting from tackiness will usually disappear.

In addition, **POLYMEL DX** gives . . .

- Good Mold Flow
- Reduced Shrinkage
- Fine Surface Finish
- Good Retention of Outline
- Excellent Dispersion of Pigment in Highly Loaded Stocks

POLYMEL DX is a low-cost styrene copolymer resin available in either powder or 2" lump form. If you have not yet investigated this unusual material, write today for a generous sample.

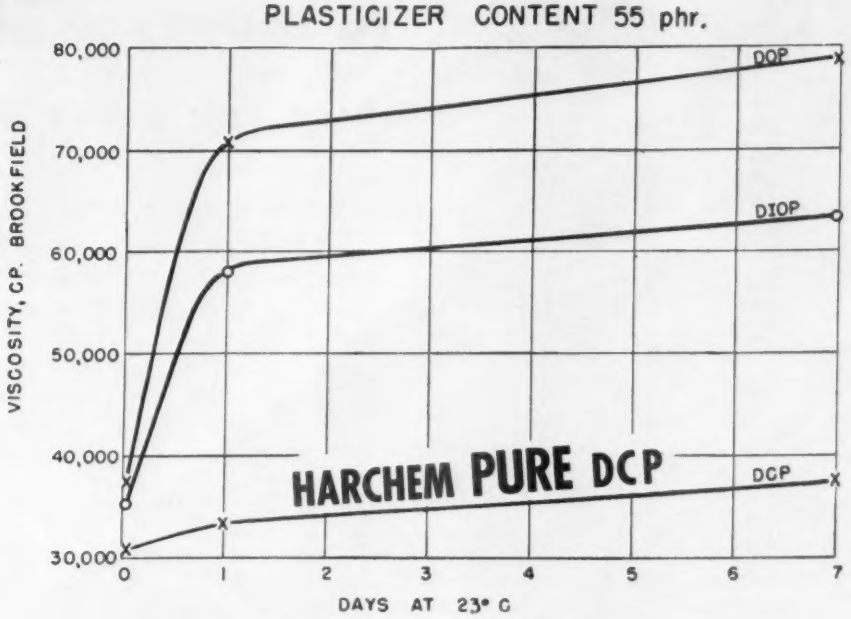
Prices fob Baltimore		
	1 drum to 4900 lbs.	— .1475¢ lb.
	5000 lbs. to truckloads	— .1425¢ lb.
	Truckloads	— .1375¢ lb.

THE POLYMEL CORPORATION

MANUFACTURERS OF
compounding ingredients for reinforcing, plasticizing, extending and processing natural and synthetic elastomers.

Plaza 2-1240 — 1800 BAYARD ST., BALTIMORE 30, MD.

Especially For PLASTISOLS



HAVE YOU TRIED

HARCHEM'S PURE DICAPRYL PHTHALATE

for stability of viscosity

IN YOUR PLASTISOLS?

These curves show comparisons between HARCHEM'S PURE DICAPRYL PHTHLATE, DOP and DIOP in identical dispersions. Write for Plastisol bulletin.

SEBACATES PHTHALATES ADIPATES

BINNEY & SMITH CO. • Distributor to the Rubber Industry

HARCHEM

25 MAIN ST., BELLEVILLE 9, NEW JERSEY

THE KEY TO HARCHEM® BETTER PLASTICS

HARCHEM DIVISION
WALLACE & TIERNAN, INC.

Manufacturers of Sebacic Acid

Canadian Distributor: W. C. Hardesty Co. of Canada Ltd., 975 Lakeshore Road, New Toronto, Canada

H-1

From friction tape to conveyor belts...

FABRICS FOR EVERY PURPOSE

Imagine a vast array of fabric sample "swatches" spread over the product out-put and processing materials of the rubber industry and you have a practical idea of the range of fabric constructions available from Wellington Sears.

You'd have to include sturdy cotton and high tenacity rayon belt and hose ducks . . . sheetings . . . chafers . . . filament nylon . . . Army ducks spun rayon and nylon fabrics. These and many other cotton, synthetic and combination fabrics in a variety of weights and widths —all would be represented.

Of course, what you won't see is the variety of fabrics not yet in existence—those we will develop for specific rubber-and-fabric problems of our customers. If you have such a problem, why not let Wellington Sears help you find the answer?

Write us for illustrated booklet "Modern Textiles for Industry."

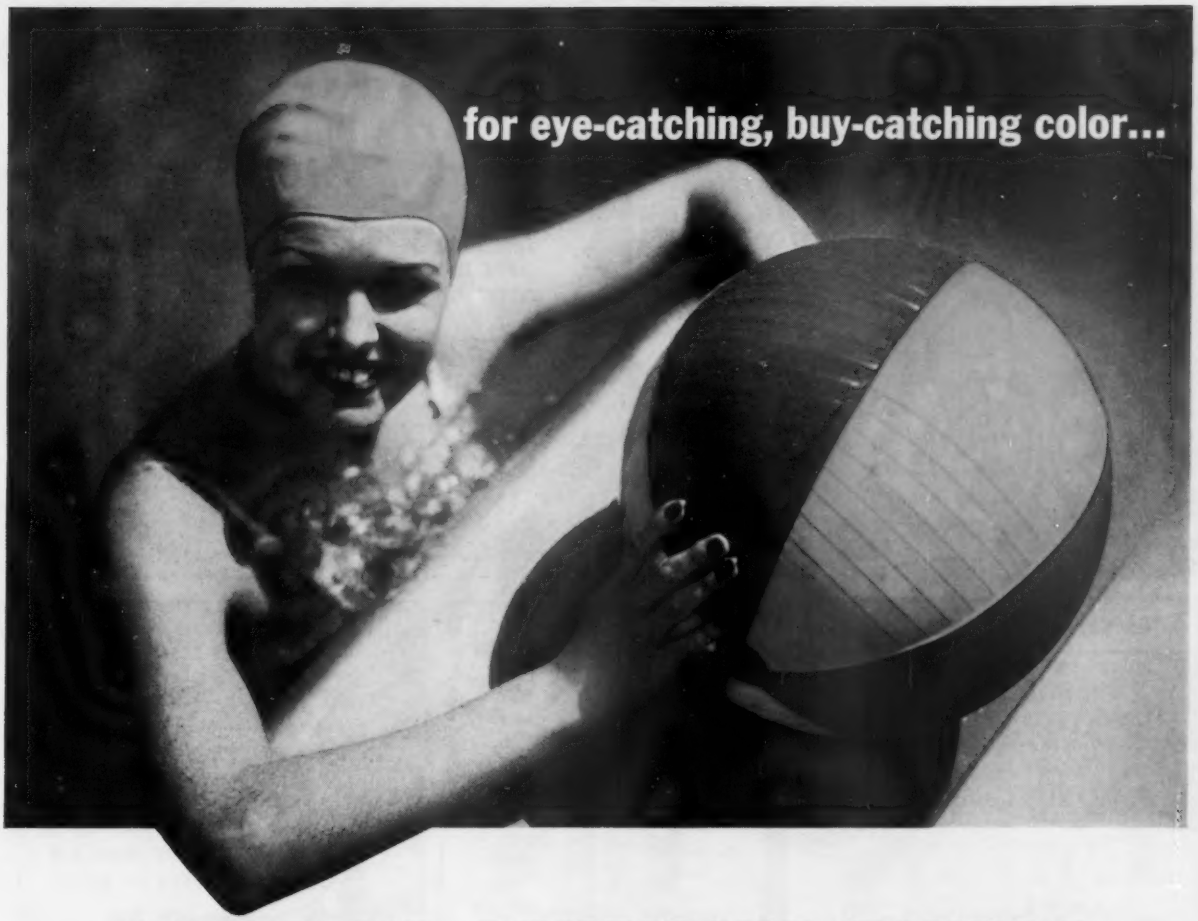
Wellington Sears

A Subsidiary of West Point Manufacturing Company

FIRST In Fabrics For Industry

For Mechanical Goods, Coated Materials, Tires, Footwear and Other Rubber Products

Wellington Sears Co., 65 Worth St., New York 13, N. Y. • Atlanta • Boston • Chicago • Dallas • Detroit • Los Angeles • Philadelphia • San Francisco • St. Louis



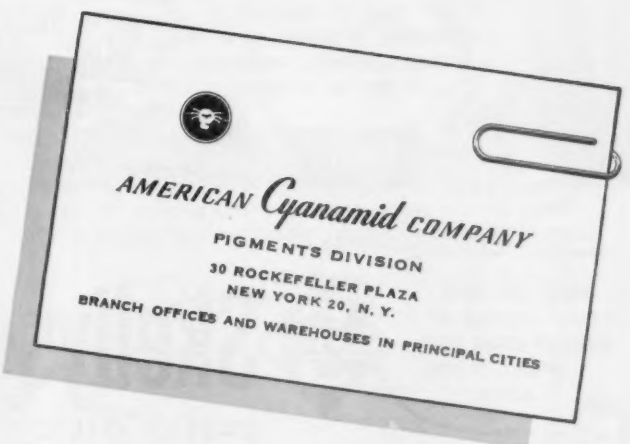
CYANAMID BENZIDINE TONERS

Benzidine Yellow Toner 45-2555 • Benzidine Orange Toner 45-2850

These strong, clean, chemically stable organic toners impart bright, highly visible colors to a wide variety of rubber products. They are lightfast, non-migrating, non-darkening and stable to acids, alkalis and sulfurous chemicals.

Cyanamid Benzidine Toners offer a wide range of colors, from bright lemon yellow to clean rich oranges, for bathing caps, balloons, toys and miscellaneous druggists' sundries.

Your Cyanamid Pigments representative will be glad to give you full information for making the most effective use of Benzidine Toners in your rubber products.


AMERICAN Cyanamid COMPANY
PIGMENTS DIVISION
30 ROCKEFELLER PLAZA
NEW YORK 20, N. Y.
BRANCH OFFICES AND WAREHOUSES IN PRINCIPAL CITIES

COLOR IS THE DIFFERENCE

BUT BOSS—I'M NO SOLVENTS EXPERT—
THEN HOW DO WE FIND OUT WHY WE'RE HAVING SOLVENT TROUBLE
BOSS, I'LL CALL THE SKELLYSOLVE PEOPLE! THEY KNOW MORE ABOUT SOLVENTS THAN ANYONE I KNOW OF!

HERE'S WHY SKELLYSOLVE "KNOW-HOW" IS FAMOUS:

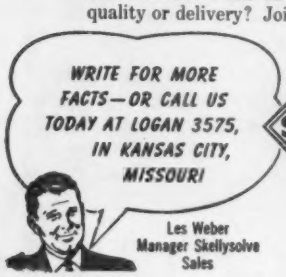
1. Skellysolve technical fieldmen have years of experience in the field.
2. Skelly Oil Company is a 25-year pioneer in solvent development.
3. Skellysolve has been a leader in constant quality-control testing.

AND—The Skellysure delivery system always gives you fast, dependable shipments.

BOSS! THE SKELLYSOLVE MAN HELPED SOLVE OUR PROBLEM!
GOOD! WE'VE TALKED ABOUT SWITCHING TO SKELLYSOLVE BECAUSE OF QUALITY AND DEPENDABILITY. NOW THAT THEY'VE PROVED THEIR KNOW-HOW, LET'S GIVE THEM AN ORDER.

JOHNSON, CALLING SKELLYSOLVE WAS ONE OF THE SMARTEST THINGS YOU'VE EVER DONE!
AND SINCE WE SWITCHED TO SKELLYSOLVE WE'VE HAD NO MORE SOLVENT TECHNICAL PROBLEMS OR DELIVERY WORRIES!
Skellysolve
SKELLY OIL CO.

When solvents are so important to your business, why take chances on quality or delivery? Join the companies who are switching to Skellysolve.



SKELLY **Skellysolve**

SKELLY OIL COMPANY
Industrial Division
605 West 47th Street, Kansas City 41, Mo.

Skellysolve for Rubber and Related Industries

Applications

SKELLYSOLVE-B. For making quick-setting cements for the shoe, tape, container, tire and other industries. Quick-drying, with no foreign taste or odor in dried compound.

SKELLYSOLVE-C. For making quick-setting cements with a somewhat slower drying rate than those compounded with Skellysolve-B.

SKELLYSOLVE-D. For cements and variety of manufacturing operations. Good odor. Quick drying. Minimum of heavy, greasy compounds.

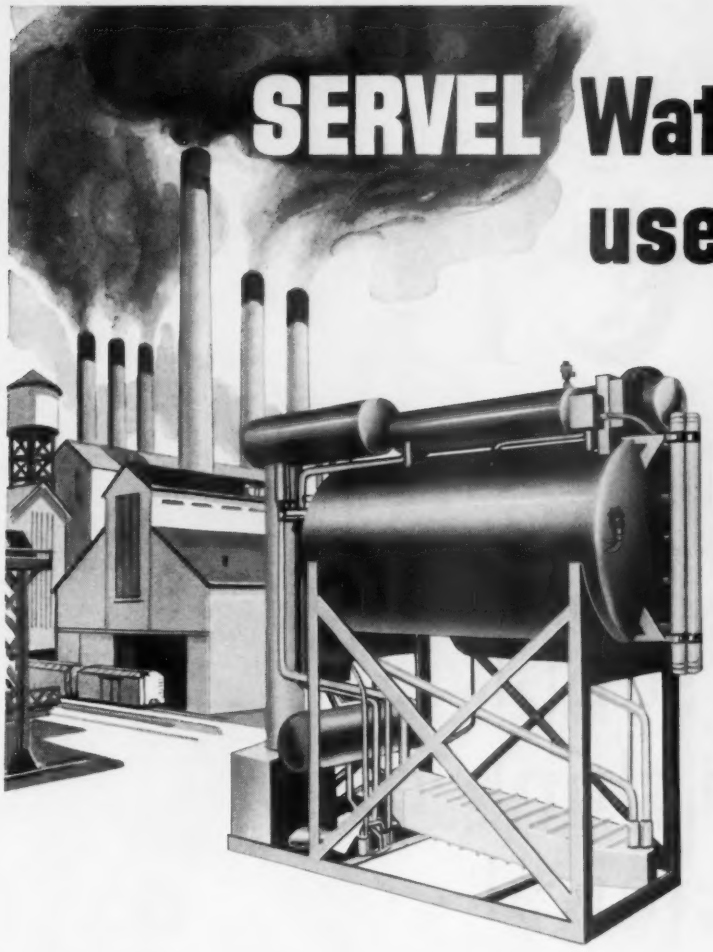
SKELLYSOLVE-H. For general use in manufacturing operations and cements, where faster evaporation rate than that of Skellysolve-D is desired.

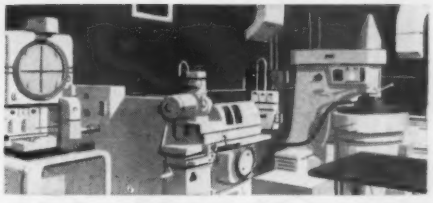
SKELLYSOLVE-E. For use wherever a relatively slow drying solvent is desired.

SKELLYSOLVE-R. For general use in tire building and a variety of other manufacturing operations and cements. Reduces evaporation losses. Medium quick final dry. Lessens bloating and skinning tendency.

SERVEL Water Chillers use waste heat

to provide low-cost chilled water





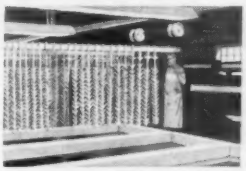
Industrial pre-cooling—Helps you increase capacity and improve performance of air compressors and internal combustion engines.

Turn waste into work and costs are bound to go down. That's just what Servel Water Chillers will do for you.

Servel's exclusive absorption principle uses waste heat (or steam) from any source to provide chilled water and at controlled temperatures. It gives you a cooling agent for air conditioning . . . or for hundreds of process applications.

These efficient units have no moving parts. Give you vibration-free operation and low upkeep. Compact size and low floor loading permit single or multiple installations in the most advantageous locations. You can locate them overhead . . . or outside of the building. What's more, you save the high cost of heavy-duty wiring.

Check these advantages against *your* cooling needs. Your Servel dealer will gladly supply details and engineering help. Or mail coupon today.



Process cooling— Here's matchless control for manufacturing and formulating processes. Regulates temperatures to precision limits.

Air conditioning—Gives you economical humidity and temperature control. Operates efficiently from cheapest fuels . . . even waste heat.

Send coupon for details, now!

Servel

the name to watch for great advances in

AIR CONDITIONING ✓ REFRIGERATION

SERVEL, INC., Dept. RA-65, Evansville 20, Indiana

Please send me specifications and full information on Servel Water Chillers.

Name_____

Firm_____

Address_____

City_____ Zone____ State_____

when

a manufacturer
of rubber products
thinks of supply...
he should think of
Shell Chemical
Synthetic Rubber,
available in several
types, delivered
promptly, by the bale
or by the carload...

Get in touch with Shell Chemical Corporation, Synthetic Rubber Sales Division, P. O. Box 216, Torrance, California.

SHELL CHEMICAL CORPORATION
SYNTHETIC RUBBER SALES DIVISION

Sharples Dispersed Ultra Accelerators for Latex

THE 7 SERIES

50% WATER DISPERSIONS

SA 57-7

ZINC DIMETHYLDITHIOCARBAMATE

SA 67-7

ZINC DIETHYLDITHIOCARBAMATE

SA 77-7

ZINC DIBUTYLDITHIOCARBAMATE

For most applications suitable for direct addition to the latex without additional treatment. Technical information on these 50% Water Dispersions—and samples, if desired—will be sent on request.

SHARPLES CHEMICALS INC.

A SUBSIDIARY OF THE PENNSYLVANIA SALT MANUFACTURING COMPANY

500 Fifth Ave., New York • 80 E. Jackson Boulevard, Chicago • 106 S. Main St., Akron

Executive Office: Philadelphia, Pa.

Martin, Hoyt & Milne Inc., San Francisco • Los Angeles • Seattle • Portland

Shawinigan Chemicals, Ltd.: Montreal • Toronto

Airco Company International, New York

SHARPLES TRADE MARK CHEMICALS

What's different about HI-SIL®...

In 1948, Columbia-Southern introduced the first fine particle reinforcing silica ever offered at reasonable cost. The original Hi-Sil pigment is now designated as Hi-Sil 101.

Since then, continued research and development has resulted in our newest and best reinforcing silica . . . Hi-Sil 233. Production economies in our new plant bring even further savings over Hi-Sil 101 plus easy processing and considerably higher reinforcement, particularly in synthetics of all types.

For processers of silicone rubber, Hi-Sil X303, a high purity material, is available on a commercial scale. Hi-Sil X303 definitely should be included in any of your silicone product development work.

If you are concerned by the heightening interest in colored stocks, transparent rubber, or in the basic problem of superior compounds at lowest cost, investigate Hi-Sil today.

The comparison of currently available Hi-Sils is given at the right. For further information, contact Department Hi-Sil at our Pittsburgh address.

TABLE OF PROPERTIES

	101	233	X303
Color	White	White	White
Specific gravity	1.95	1.95	1.95
Average particle size, microns	0.030	0.022	0.022
B.E.T. surface area, sq. m./gm.	110	150	160
Refractive index	1.44	1.46	1.45
Oil absorption, Rub-in method gms. oil/100 gms. pigment	160	170	248
pH, 5% water suspension	9.0	7.3	4.5
Heat loss, 105° C.	5%	5%	6%
Total ignition loss, 1200° C.	10%	10%	10%
SiO_2	85%	87%	88%
CaO	3%	0.5%	
Fe_2O_3	0.3%	0.2%	
Al_2O_3	0.3%	0.6%	
NaCl	1.5%	1%	0.04%

Do you have the May bulletin on the advantages and economies made possible by the partial replacement of blacks by Columbia-Southern silica pigments?

It is yours for the asking. Write today.

COLUMBIA-SOUTHERN CHEMICAL CORPORATION

SUBSIDIARY OF PITTSBURGH PLATE GLASS COMPANY

ONE GATEWAY CENTER · PITTSBURGH 22 · PENNSYLVANIA

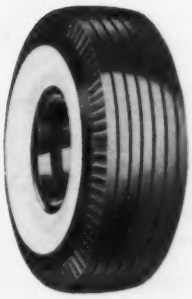
DISTRICT OFFICES: Cincinnati • Charlotte • Chicago • Cleveland • Boston New York • St. Louis • Minneapolis • New Orleans • Dallas • Houston Pittsburgh • Philadelphia • San Francisco

IN CANADA: Standard Chemical Limited and its Commercial Chemicals Division

ANOTHER QUALITY CHEMICAL BY GENERAL TIRE

KO-BLEND I. S.®

. . . eliminates sulfur bloom discoloration in white sidewalls



Ko-Blend I. S. is the best way to protect against costly sulfur bloom in producing premium white sidewall tires. This predispersed insoluble sulfur masterbatch eliminates bloom problems completely and in addition reduces milling time.

For further information write to The General Tire & Rubber Company, Chemical Division, Akron, Ohio, or our

Sales Agents—Harwick Standard Chemical Co., U. S. A.
R. M. Ferguson Co., Canada.
Binney & Smith International Inc., Export.

Creating Progress Through Chemistry

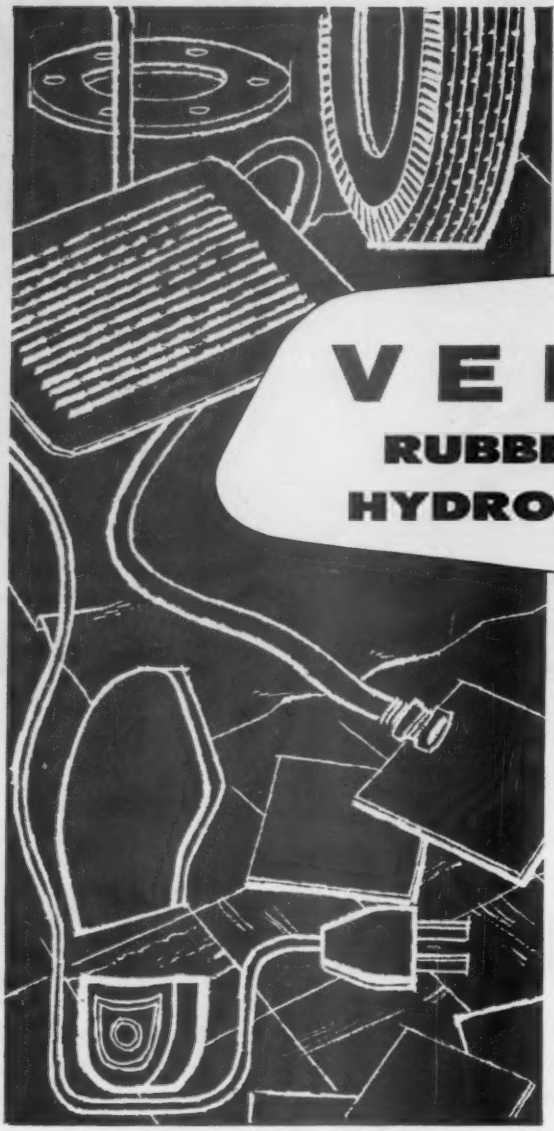
Chemical Division
GENERAL
THE GENERAL TIRE & RUBBER CO.

KO-BLEND I. S.®

General Tire also produces . . .

Vygen* (Polyvinyl Chloride) • Gen-Flo* (Paint Latex) • Gen-Tac* (Vinyl Pyridine Latex)
Kure-Blend MT® (Accelerator Masterbatch)
Glykon* (Polyester Resin) • Polystop® (GRS Shortstop)

*T. M. G. T. & R. Co.



For Rubber Compounding...

VELSICOL

RUBBER PROCESSING HYDROCARBON RESINS

Available in Varied Melting Point Ranges

- Compatible with natural and synthetic rubbers.
- Effective plasticizers and softeners.
- Improve milling, calendering and tubing characteristics.
- Provide excellent physical properties.
- Ideal dispersing agents for fillers and pigments.
- Possess high electrical resistance properties.

Some Suggested Applications

MECHANICAL GOODS
RUBBER SOLES AND HEELS
RUBBER FLOOR TILING
TUBULAR COMPOUNDS
MOLDED RUBBER PRODUCTS
ELECTRICAL INSULATION COMPOUNDS
RUBBER ADHESIVES AND CEMENTS
RECLAIMED RUBBER SHEETING
GASKETS AND JAR RINGS
COLORED RUBBER STOCKS
HARD RUBBER COMPOUNDS
BATTERY CASES

Write, wire, or phone for complete information on Resins and reclaim oils

RUBBER RECLAIM OILS

Investigate these effective, economical reclaim oils to obtain high-quality reclaim rubber. Velsicol reclaim oils are suitable for a wide variety of reclaiming processes.

PETROLEUM DERIVED CHEMICALS
VELSICOL
SERVING BASIC INDUSTRIES

VELSICOL CORPORATION

Division of Arvey Corporation

General Offices and Laboratories 330 East Grand Avenue Chicago 11, Illinois

when you repair...

Complete, rebuilt body, reassembled and tested, carries a new-machine guarantee.

modernize!

At Farrel-Birmingham, the Banbury* mixer is constantly being improved in design and materials to keep pace with tougher service demands in the rubber industry, and the severe duty encountered in the production of certain types of plastics.

It will pay you to remember this when your Banbury needs rebuilding, because the modern features of design and improved materials, which are now incorporated in new Banburys, are readily adaptable to existing machines. These improvements can mean higher operating efficiency and greater wearing qualities for your Banbury.

A Banbury mixer rebuilt by Farrel-Birmingham corresponds so closely to a new Banbury that it carries a new machine guarantee. Such a guarantee provides assurance that the rebuilt machine will be "as good as new" when it is returned to service.

We carry the largest existing stock of standard parts and complete new bodies. For details contact any of the offices listed.

FARREL-BIRMINGHAM COMPANY, INC.

ANSONIA, CONN. (Telephone Ansonia 4-3331)

AKRON, OHIO, 2710 First National Tower (Tel. POrtage 2-8871)
CHICAGO, ILLINOIS, 120 So. LaSalle St. (Tel. Andover 3-6434)
LOS ANGELES, CALIF., 2032 Santa Fe Ave. (Tel. Lafayette 3017)
HOUSTON, TEXAS, 860A M & M Building (Tel. CApitol 6242)

FB-898

*Trade-mark

Farrel-Birmingham®

what difference does a truck make?

none... if you're talking about quality chemicals! 36 years ago, when our delivery trucks looked like this... The C. P. Hall Company was supplying the rubber industry with QUALITY chemicals.

Today we deliver in trucks like this... and we're still delivering QUALITY chemicals. Remember this, when you think of quality-controlled chemicals: The C. P. Hall Company quality is still the same dependable factor in your production plans!

We have built our business on QUALITY and SERVICE... and have never failed the men in the rubber industry who depend on us for both.

AKRON, OHIO • LOS ANGELES, CALIF.
CHICAGO, ILL. • NEWARK, N. J.

The C. P. Hall Co.
CHEMICAL MANUFACTURERS

HEAT V LIGHT

HARSHAW VINYL STABILIZERS

for the vinyl plastic and coating industries

Important additives for processing and stabilizing clear and opaque vinyls—

CALENDERED FILMS AND SHEETS • EXTRUSIONS RIGIDS AND FLEXIBLE PLASTISOLS • ORGANOSOLS • COATINGS

CADMIUM 2-V-4

Leading heat and light stabilizer for clear or opaque stock, an organic liquid complex containing no disadvantageous soapy component. Unequalled for stabilizing against effects of sunlight or outdoor aging.

BARIUM-CADMIUM 128-V-5

Leading combination of coprecipitated laurates for outstanding performance, where lubricating advantages are required. Generally 30% more effective than common barium-cadmium laurates.

Write for a Vinyl Stabilizer Check List that you may use to detail as much as possible your particular requirements.

A practical stabilizing system will be suggested promptly, based on our experience with the various Vinyl Polymers and Copolymers and with the different Plasticizers, for your processing and product end-use requirements.

THE HARSHAW CHEMICAL CO.
CLEVELAND 6, OHIO

Best effects are attained for particular requirements by combining 2-V-4 or 128-V-5 in a stabilizing system with one or more of the following three stabilizers.

BARIUM 1-V-4

Compatible barium compound, minimum effect on viscosity. Permits processing at higher temperatures.

ORGANIC 8-V-1

Chelating agent, more than two times as effective as common organic phosphites. Inactivates harmful by-products to boost stability. Contributes to top clarity

ORGANIC 7-V-2

Epoxy assistant, highly effective HCl scrubbing agent, undiluted. Will extend stability for longer processing periods.

CADMIUM 28-V-2

For rigids, opaque to translucent. Stabilizes unplasticized resin efficiently and economically, with minimum effect on physical properties of product.

Stabilizing Systems developed for Harshaw Customers, for special processing and finished product properties, may contain one of the following stabilizers.

ZINC 9-V-1: Organic liquid complex containing no disadvantageous soapy component used in selected formulations.
CADMIUM 2-V-7: For modified solutions and organosols.
CADMIUM 24-V-1: Organic liquid complex for highest attainable clarity, used principally with dispersion resins.
CADMIUM 2-V-400: Modified 2-V-4.
CADMIUM 2-V-8: Selected laurate, used principally with low fusing resins.
BA-CD 12-V-5: Coprecipitated laurate.
CADMIUM 22-V-1: For rigid, clear and opaque stocks.
ORGANIC 7-V-1: Epoxy assistant.
ORGANIC 7-V-4: Epoxy assistant, for rigids.
BARIUM 1-V-3: Dispersible stearate, to contribute lubricity with barium effects.
BARIUM 1-V-6: For asbestos filled tile.
BARIUM 1-V-7: Liquid, for modified plastisols and organosols.
CALCIUM 5-V-1: Dispersible stearate, to contribute with calcium effects.
CALCIUM 5-V-22: Dispersible, low melting stearate to reduce internal friction.
ORGANIC 8-V-100: Modified 8-V-1.

everybody talks

QUALITY

these pure light red iron oxides

by WILLIAMS assure it!

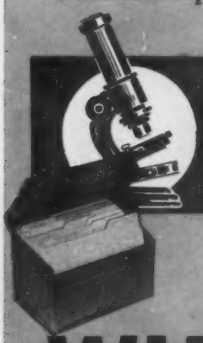
R-1599 | R-2199 | R-2899

They represent the ultimate in red iron oxide colors for the rubber industry.

Williams iron oxides come to you with all the benefits of our 75 years in the pigment business . . . and as a result of our experience in producing pure red iron oxides to specifications of the leading rubber companies.

Each is manufactured to rigid specifications for copper and manganese content, pH value, soluble salts, fineness, color, tint and strength by controlled processes and with special equipment. *The result is absolute uniformity of product.*

If you haven't already done so, try these finest of all iron oxide colors. Your own tests will show there is no equal for Williams experience.



LET WILLIAMS PUT THE MICROSCOPE ON *Your* COLOR PROBLEM

Whatever your color problem, bring it to Williams. Our 75-year experience can often save you time, money, and headaches in proper color formulation.

Address Dept. 8,
C. K. Williams & Co., Easton, Pa.

IRON OXIDES • CHROMIUM OXIDES
EXTENDER PIGMENTS

WILLIAMS

COLORS & PIGMENTS

C. K. WILLIAMS & CO.

EASTON, PA. • EAST ST. LOUIS, ILL. • EMERYVILLE, CALIF.

The Best Method Yet Devised . . .

FOR DICING SHEET STOCK

The Famous CUMBERLAND "Stair-Step" Dicer

Here at last is the answer to your problems of dicing rubber or vinyl sheet stock. Produces perfect cubes ranging in size from ⅛ to ½" by merely changing knives.

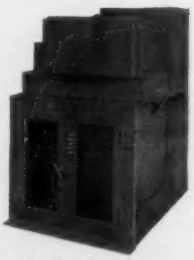
Comes in two sizes designed to handle sheets up to 7" or 14" in width. Other sizes made to order.

Input speeds range from 10 to 125 feet per min. depending on material and size of cube desired.

The CUMBERLAND Rotary Chopping and Dicing Machine

As a chopper, this machine efficiently cuts rubber and vinyl slabs into small pieces. Two sizes available to handle stock widths up to 14 or 24 inches.

As a dicer in modified form, handles principally vinyl sheet stock. A less expensive machine though less universal than the "Stair-Step" Dicer shown above.



Write for Complete Information

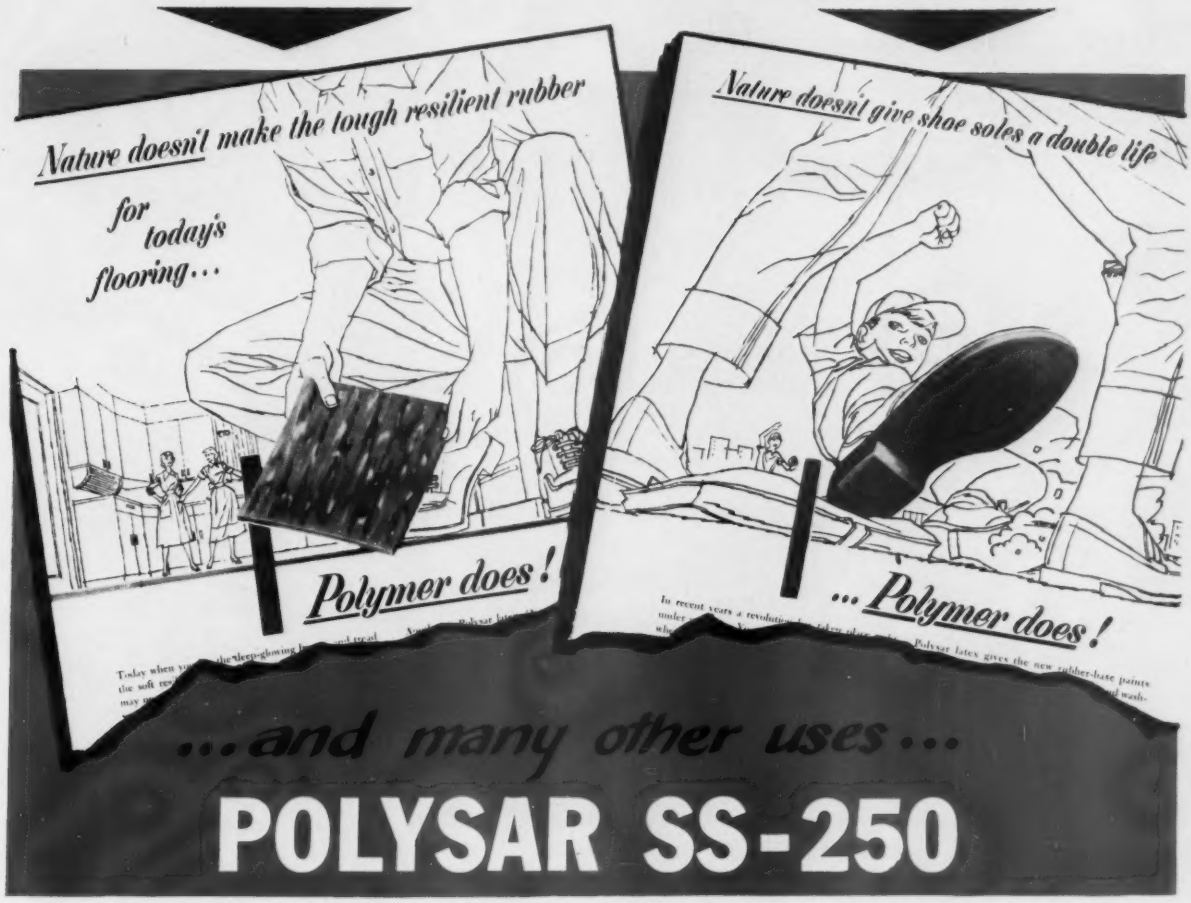
For Granulating Plastic . . .
Investigate Cumberland's complete line of granulating machines. Request Bulletin 260.

CUMBERLAND Engineering Co. Inc.

DEPT. 3 · BOX 216 · PROVIDENCE · RHODE ISLAND

Builders of Better Machines for the Rubber and Plastics Industry

FOR FLOOR TILE . . . SHOE SOLING


Nature doesn't make the tough resilient rubber
for today's flooring . . .
Polymer does!
Nature doesn't give shoe soles a double life
. . . Polymer does!
. . . and many other uses . . .
POLYSAR SS-250

If you manufacture floor tile, shoe soling, or other products with similar requirements, you will find Polysar SS-250 the most efficient and versatile rubber you can use. From Polysar SS-250 you can expect:—

EASY PROCESSING
EXCELLENT DISPERSION
UNIFORM PRODUCT QUALITY
HIGH FLEX LIFE
GOOD ABRASION RESISTANCE
GOOD LIGHT STABILITY

POLYSAR SS-250 is white—specify it to obtain a wide range of colours in your finished products.

POLYMER CORPORATION LIMITED
POLYSAR
SARNIA CANADA
Registered trade mark

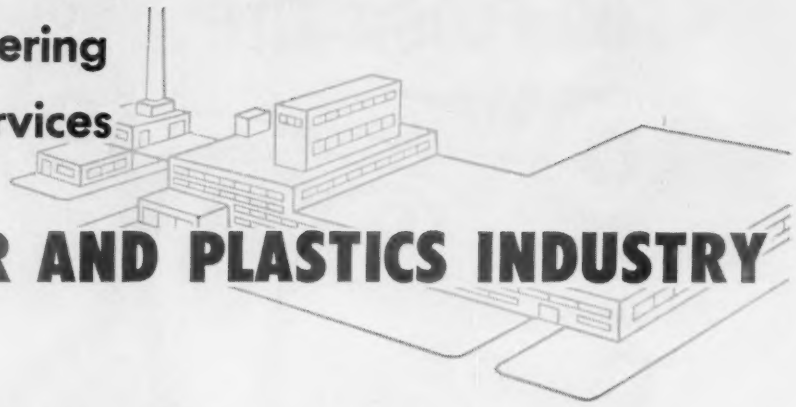
AT YOUR SERVICE

Polymer representatives will be glad to discuss your particular processing problems. For assistance, write to the Sales and Technical Service Division, Sarnia, Canada or ask your nearest Polysar representative.

U.S.A. distributor, H. Muehlstein & Co. Inc.

POLYMER CORPORATION LIMITED
SARNIA • ONTARIO • CANADA
Distributors in 27 countries around the world

complete engineering and planning services for the RUBBER AND PLASTICS INDUSTRY



- COMPLETE NEW PLANTS—from the selection of the site through all the many phases of engineering to produce an operating facility.
- PLANT MODERNIZATION—complete engineering to improve facilities in the shortest time, with the least disturbance to production.
- MATERIALS HANDLING—development and engineering of independent units or complete facilities.
- EQUIPMENT DESIGN—engineered from sketch layout to finished operating mechanism.
- PROCESS DEVELOPMENT—analysis, flow diagram, layout and complete engineering.
- SERVICES—electrical and mechanical control, lighting, dust control, heating and ventilation.

Engineers serving Industry for over 30 Years

INDUSTRIAL ENGINEERING DIVISION

NEW YORK
CHICAGO
HOUSTON
WINDSOR, ONT.

Giffels & Vallet INC.
DETROIT, MICHIGAN

The complete planning and engineering services provided by Giffels & Vallet are discussed in a special Rubber and Plastics Brochure. A copy will be mailed on request.

what it takes to make

WITCO-CONTINENTAL

CARBON BLACKS

It takes complex reactors, automatic controls and efficient collecting facilities . . . and (for channel blacks) thousands of flame tips impinged against a moving channel.

In five modern plants, Witco-Continental manufactures a comprehensive line of carbon blacks for every rubber compounding need.

Witco-Continental has what it takes *(facilities and experience)* to make carbon blacks of highest quality – and to give you expert technical service on your formulations.

This instrument panel helps control properties of Witco-Continental furnace blacks.

Inside a channel house at one of Witco-Continental's channel black plants.

For a listing of Witco-Continental Carbon Blacks

Witco-Continental CARBON BLACKS

Recognized for the past 35 years as dependable Carbon Blacks for rubber products of superior quality.

FURNACE BLACKS

Continex SRF — Natural Gas Type, Semi-Reinforcing

Continex SRF-NS — Natural Gas Type, Non-Staining

Continex HMF — Natural Gas Type, High Modulus

Continex HAF — Oil Type, High Abrasion

Continex FEF — Oil Type, Fast Extruding

Continex ISAF — Oil Type, Intermediate Super Abrasion

CHANNEL BLACKS

Continental AA — Easy Processing (EPC) — Witco No. 12

Continental A — Medium Processing (MPC) — Witco No. 1

Continental F — Hard Processing (HPC) — Witco No. 6

Continental R-40 — Conducting (CC)

Witco-Continental's technical service staff at our new laboratory in Akron will be glad to assist you with your rubber formulations.

WITCO

35 Years of Growth

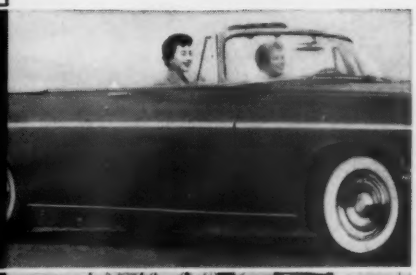
WITCO CHEMICAL COMPANY
CONTINENTAL CARBON COMPANY

122 East 42nd Street, New York 17, N.Y.

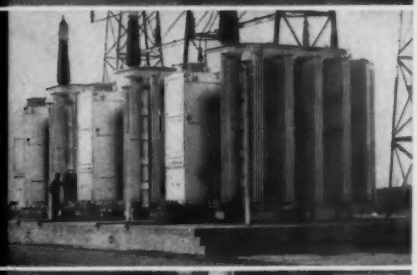
Chicago · Boston · Akron-Cleveland · Atlanta · Houston · Amarillo · Los Angeles
San Francisco · London and Manchester, England

ENJAY BUTYL outstanding for...

AUTOMOBILE
AXLE BUMPERS, TOPS,
WINDOW SEALS, HOSE

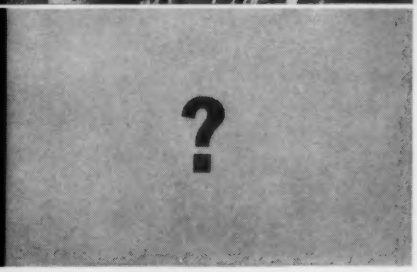


HIGH VOLTAGE
POWER CABLE
INSULATION



LONG-WEARING
AGE-RESISTANT
TRACTOR TIRES

THE PRODUCT
YOU
MANUFACTURE



ENJAY
BUTYL

Enjay Butyl resists heat and cold . . . won't chip or crack . . . resists chemicals . . . retains flexibility and resilience . . . resists the aging effect of sunlight and ozone . . . is impermeable to air and other gases. Enjay Butyl is the only type of rubber, natural or synthetic, that offers this combination of advantages—and at low cost. That's why Enjay Butyl is being selected as the best rubber for more and more industrial products.

To find out how Enjay Butyl can improve your product, contact the Enjay Company. Our technical representatives and laboratories are at your service.

ENJAY COMPANY, INC., 15 West 51st Street, New York 19, N. Y.
District Office: 11 South Portage Path, Akron 3, Ohio

For Tough, High Grade Tire Treads

USE PEQUANOC

Champion

RECLAIM

To produce long wearing tire treads and camelback at an economical price, we recommend Champion reclaim.

A typical formula which meets Federal Specification ZZ-T-416a follows:

COMPOUND A-418-5

GR-S 1601	74.72
PEQUANOC CHAMPION	**13.46**
Zinc Oxide	1.70
PBNA	0.57
Stearic Acid	0.86
Light Process Oil	3.43
MR	3.43
Sulfenamide Accelerator	0.70
Sulfur	1.13
	100.00

	A-418-5	Specification ZZT-416A
Estimated Pound Cost	$0.1900	—
Specific Gravity	1.155	1.175 Max.
Estimated Volume Cost	$0.2195	—

PHYSICAL PROPERTIES

Press Cured 60 min @ 260°F.		
Tensile (psi)	2200	2000 Min.
Elongation (%)	520	450 Min.
Modulus @ 300% (psi)	850	700 Min.

Pequanoc Rubber Co.

MANUFACTURERS OF RECLAIMED RUBBER

MAIN SALES OFFICE and FACTORY: BUTLER, N. J.

Facts You Should Know About National Aniline's Commercial Production of Tolylene Di-isocyanates

National® NACCONATES*

These simple facts are important to every present and potential user of di-isocyanates:

National Aniline through Allied Chemical resources is basic in every essential raw material needed for the manufacture of di-isocyanates . . . hydrocarbons, nitric and sulphuric acids, hydrogen, chlorine, carbon monoxide, alkalis, aromatic solvents, etc. To our knowledge, no other producer enjoys this advantage.

National Aniline and Allied Chemical experience in phosgene and diamine production spans over 35 years. To our knowledge, no comparable experience exists on the American continent.

We now have commercial-quantity production of Nacconate 80: can furnish other Nacconates for commercial development work (See list below). Additional mass-production plant facilities are now under construction.

Now available for immediate delivery in commercial quantities from Buffalo, N. Y., subject to prior sale:

National NACCONATE 80 Isomeric mixture of 80% 2, 4-tolylene di-isocyanate and 20% 2, 6-tolylene di-isocyanate

Also available for commercial development work:

National NACCONATE 65 Isomeric mixture of 65% 2, 4-tolylene di-isocyanate and 35% 2, 6-tolylene di-isocyanate

National NACCONATE 100 2, 4-tolylene di-isocyanate

National NACCONATE 200 3, 3′ bitolylene 4, 4′-di-isocyanate

National NACCONATE 300 Diphenylmethane 4, 4′-di-isocyanate

We invite inquiries for samples, technical data and quotations.

Watch the editorial and advertising pages of this publication for additional information on National NACCONATES

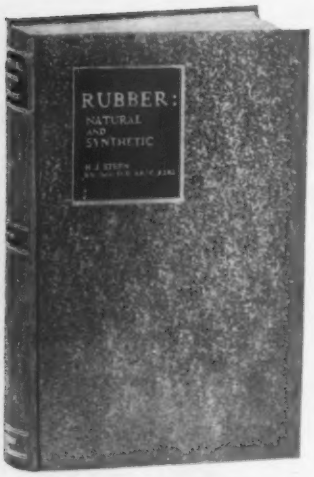
NATIONAL ANILINE DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 RECTOR STREET, NEW YORK 6, N. Y.

Allied Chemical

Boston Providence Philadelphia Chicago San Francisco Portland, Ore. Greensboro Charlotte Richmond Atlanta Los Angeles Columbus, Ga. New Orleans Chattanooga Toronto

*TRADE MARK

first edition . . . just published



491 Pages — 200 Illustrations

RUBBER:

Natural and Synthetic

By H. J. STERN
B.Sc., Ph.D., A.R.I.C., F.I.R.I.

Price: $12.00* (in U. S. and Canada)

(Orders for all other countries should be sent with remittance of 75s. 0d. to the publisher: MACLAREN & SONS, LTD., Stafford House, Norfolk Street, London, W.C.2, England).

About the Book–

This book fills the need for an English-language text book on all phases of rubber and rubber products manufacture. As indicated by the chapter heads, the book is of interest to rubber manufacturers, suppliers of chemicals and machinery, rubber technologists and to students of rubber who will find present-day technical procedures clearly defined.

Part I covers natural rubber production, composition, properties and vulcanization as well as compounding ingredients, machinery, reclaiming and latex. Part II covers the development, manufacture and uses of synthetic rubber and latices, synthetic resins and plastics. In addition the manufacture of various rubber products are fully covered, including soles and heels, extruded goods, bonding, hollow goods, sponge and expanded rubber, belting, hose, tires, tubes and hard rubber.

Purchasers in the United States and Canada may use the coupon below or their own purchase orders.

RUBBER AGE, ...19...
101 West 31st St.,
New York 1, N. Y.

Please send me a copy of Stern's "Rubber: Natural and Synthetic" @ $12.00*.

....Remittance enclosed. ....Send invoice.

Name .....

Address .....

.....

(*) Add 3% for N. Y. City addresses.

About the Author—

Dr. Stern has been engaged as a chemist in the rubber industry for more than 25 years and since 1935 has practiced successfully in London as a Consultant. He is the author of "Practical Latex Work" and of many publications concerned with the scientific and technological aspects of natural and synthetic rubber.

SUMMARY OF CONTENTS BY CHAPTERS

Part I

1. **Historical Introduction; Mastication; Vulcanization.**
2. **Plantation Rubber.**
3. **Natural Rubber: Composition, Reactions, Derivatives.**
4. **Properties of Vulcanized Rubber.**
5. **Compounding Ingredients.**
6. **Rubber Machinery; Solvents and Solutions; Reclaiming.**
7. **Latex.**

Part II

8. **Synthetic Rubber (History and Development).**
9. **Manufacture and Technology of Synthetic Rubbers.**
10. **Synthetic Rubber Latices.**
11. **Synthetic Resins; Plastics.**
12. **Manufacturing Processes (of various rubber products).**
13. **Testing and Analysis.**

Sources of Further Information; Metric Equivalents; Subject Index.

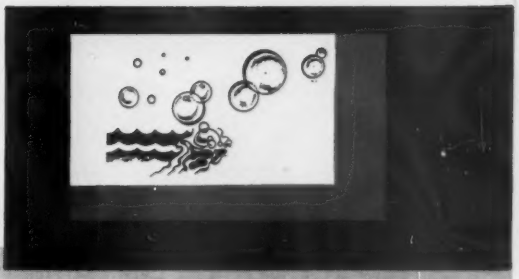
another important advantage to manufacturers of vinyl products

DRAPEX 3.2

LOW TEMPERATURE EPOXY PLASTICIZER

provides

LOW SOAPY WATER EXTRACTION



The chart on the right shows the results of tests conducted to compare the soapy water extraction of Drapex 3.2 with other plasticizers. Assuming that all losses are plasticizer losses, the chart reveals the extremely low extraction of Drapez 3.2 – comparable to DOS, but, at a lower cost.

In addition, the low temperature flexibility of Drapex 3.2 is superior to DOA. It also has a low specific gravity combined with low volatility.

The epoxy content of Drapex 3.2 provides excellent stability, high heat resistance, and good weathering characteristics. All of these advantages help you make better, longer lasting vinyls at lowest cost. Make your own test and see. Write today for Technical Bulletin 4 and a generous working sample.

SOAPY WATER EXTRACTIONS (½% Ivory Soap Solution @ 150° F.)

COMPOUNDS TESTED	Resin	100.0	100.0	100.0	100.0	100.0
	Dioctyl Phthalate	45.0	30.0	30.0	30.0	30.0
	Dioctyl Sebacate	—	15.0	—	—	—
	Dioctyl Adipate	—	—	15.0	—	—
	Butyl Epoxy Stearate	—	—	—	15.0	—
	DRAPEX 3.2	—	—	—	—	15.0
Per Cent of Total Plasticizer Lost	5 Laundering Cycles	3.9%	2.3%	6.9%	12.7%	2.6%
	6 Laundering Cycles	4.9%	3.1%	8.7%	14.6%	3.5%
	7 Laundering Cycles	6.0%	4.2%	10.3%	16.5%	4.4%
	8 Laundering Cycles	6.6%	4.7%	11.4%	17.9%	5.1%
	9 Laundering Cycles	8.5%	5.7%	13.8%	19.8%	6.1%
	10 Laundering Cycles	9.3%	6.5%	14.7%	20.4%	6.8%

"PURR-FECTION"

ARGUS CHEMICAL CORPORATION

633 COURT STREET BROOKLYN 31, N. Y.

EVERLASTINGLY PLIABLE

CLEAN-PEELING

OUTSTANDING SURFACE GLOSS

NON-FLAKING

OF UNIFORM CALIPER

MINIMUM SURFACE LOAD

YET TIGHTLY FILLED

HOLLISTON BRATEX

RUBBER HOLLAND

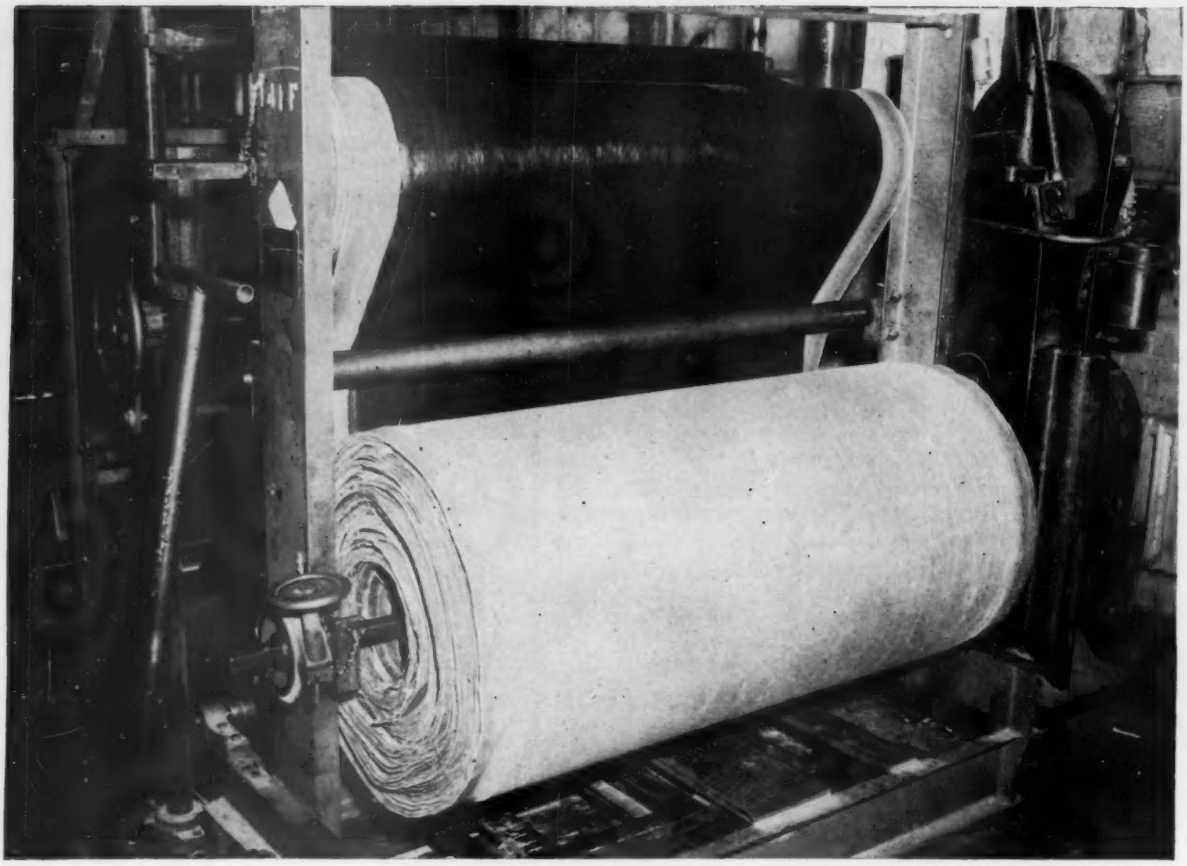
BRATEX is available in three standard qualities, 20 and 40 inch widths, 100 and 250 yard rolls. Special size rolls to order.

THE HOLLISTON MILLS, INC.

NORWOOD • MASSACHUSETTS

NEW YORK • PHILADELPHIA • CHICAGO

MILWAUKEE • SAN FRANCISCO



CLIMCO PROCESSED LINERS

Eliminate Adhesions at the Bias Cutter

If your stock has been stored in a Climco Processed Liner, you can depend on easier, faster production, and the stock always separates from the liner cleanly, easily.

And Climco Processed Liners preserve the tackiness of the stock; exclude mould, bloom and sunlight. Rejects and losses due to gauge distortion are sharply reduced.

To speed production and to lengthen liner life, Climco Processing has been accepted in the rubber industry for 31 years. For superior liners, try Climco Processed Liners.

THE CLEVELAND LINER & MFG. CO.
5508 Maurice Ave. • Cleveland 27, Ohio

GET THE FULL STORY ON CLIMCO PROCESSING

Illustrated booklet tells about Climco Liners and Linerette separating paper. Tells how to get better service from liners. Write for your copy now.

LINERETTE INTERLEAVING PAPER
Treatment Contains
NO OIL OR WAX
Samples on Request

CLIMCO
PROCESSED LINERS

FOR FASTER, BETTER PRODUCTION AT LOWER COST

THE CLEVELAND LINER & MFG. CO. CLIMCO CLEVELAND, OHIO, U.S.A.

FOR THE BEST QUALITY/COST RATIO IN ALL TYPES OF VINYL COMPOUNDS

. . . add this **3** *plasticizer* **low volatility** *combination in proportions to meet individual quality/cost requirements*

Cabflex® DDP + **Cabflex® TCP** + **Cabflex® DDA**

DI-DECYL PHTHALATE | TRICRESYL PHOSPHATE | DI-DECYL ADIPATE

Cabot makes the Cabflex plasticizers, Cabflex DDP, Cabflex TCP, and Cabflex DDA for use in vinyl plastics compounds, but does not manufacture the compound itself.

Cabflex DDP, BASE PLASTICIZER, gives low volatility, low water extraction, and good low temperature properties

Cabflex TCP, MODIFYING PLASTICIZER, improves processing, increases the compatibility range of plasticizer systems, stabilizes DDP against oxidation and flameproofs your compounds

Cabflex DDA, LOW TEMPERATURE PLASTICIZER, increases the flexibility range

ORDER ALL THREE IN MIXED TANK CAR and TANK TRUCK QUANTITIES . . .

Now! . . . Shipments Immediately Available

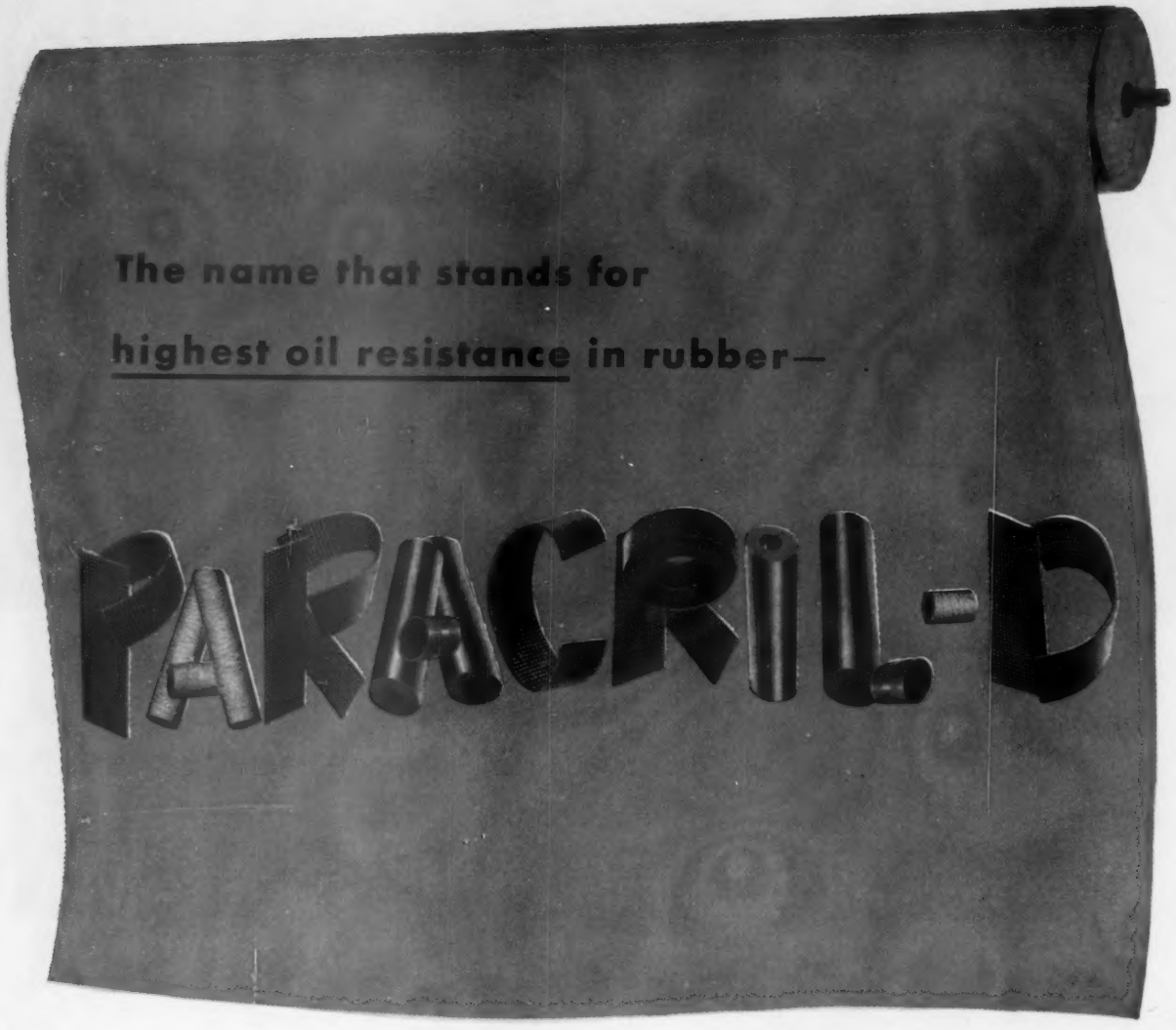
CABOT PLASTICS CHEMICALS DIVISION

GODFREY L. CABOT, INC. 77 Franklin St., Boston 10, Mass.

CABFLEX®Di-OP (di-iso-octyl phthalate)
CABFLEX®DOP (di-2-ethylhexyl phthalate)
CABFLEX®ODP (iso-octyl decyl phthalate)
CABFLEX®DDP (di-decyl phthalate)

CABFLEX Di-OA® (di-iso-octyl adipate)
CABFLEX®DOA (di-2-ethylhexyl adipate)
CABFLEX®ODA (iso-octyl decyl adipate)
CABFLEX®DDA (di-decyl adipate)

CABFLEX®Di-OZ (di-iso-octyl azelate)
CABFLEX Di-BA®(di-iso-butyl adipate)
CABFLEX®TCP (tricresyl phosphate)
CABOL 100 (hydrocarbon oil plasticizer)



Today's industry uses many products made of rubber. It also uses lots of oils, solvents, and other chemicals that cause ordinary rubbers to soften, swell, and become useless...*but not* PARACRIL® D.

PARACRIL D is the latest and most oil-resistant of the entire PARACRIL family, butadiene acrylonitrile synthetic rubbers produced by Naugatuck. This is the rubber of very high nitrile content which retains good flexibility and excellent processing properties. It also provides good tensile properties and excellent abrasion resistance, as well as unequalled resistance to petroleum and animal oils, esters, aromatic hydrocarbons, and chlorinated organic liquids. All the PARACRILS are *non-discoloring* and *non-staining*.

If *you* manufacture or use oil-resistant rubber parts or products, for any purpose, write for the latest data on PARACRIL D today.

Naugatuck Chemical

Division of United States Rubber Company
Naugatuck, Connecticut

BRANCHES: Akron • Boston • Charlotte • Chicago • Los Angeles • Memphis • New York • Philadelphia • IN CANADA: Naugatuck Chemicals, Elmira, Ontario
Rubber Chemicals • Synthetic Rubber • Plastics • Agricultural Chemicals • Reclaimed Rubber • Latices • Cable Address: Rubexport, N.Y.

Rubber Age

Vol. 77, No. 3 JUNE, 1955

Some Recent Applications of Rubber-Base Adhesives

By J. M. McCLELLAN

Manager, Applied Research Department, Adhesives and Coatings Division, Minnesota Mining and Manufacturing Co., Detroit, Mich.

MODERN industry now using rubber-base adhesives for numerous bonding operations can trace the beginning of this important method of fastening to the automotive industry's need for a better way of fastening rubber mats on running boards. Today, the running boards have disappeared but the modern passenger car uses more adhesives than ever. Along with this growth in the auto industry has come corresponding growth in usage in thousands of products encountered in every day living and in numerous industrial and military applications. Better adhesives are doing more jobs well and as a direct result are leading to additional designs that promote still further growth.

Primitive adhesives, including asphalt, pitch and natural gums, preceded the first rubber adhesives made from latex and from solutions of natural rubber in benzene or gasoline. The development of 3M's Scotch Brand Cellophane Tape led to a broader acquaintance with pressure-sensitive adhesives and to requests for the adhesive used to make it stick. From this start there has been a truly phenomenal growth and the end is still a long way off.

Defining adhesion may prove of value in understanding what is being accomplished in numerous industrial applications. "Specific adhesion" is a measurement of the molecular attraction exerted between two surfaces when they are placed in intimate contact. In practice, a mechanical-type fastening is encountered when adhesive solutions are coated on rough or porous surfaces and is generally called "mechanical adhesion." "Effective adhesion" as measured by a destructive test on an adhesive joint is sometimes a combination of these two. Another important and sometimes limiting factor in an adhesive joint is the internal strength of the adhesive and this is sometimes the point of failure.

To the industrial user of adhesives a variety of manufacturing advantages are offered. Most applications permit the manufacturer to take advantage of more than one of the following features: Adhesives may be applied to all kinds of materials, provide a uniform distribution of stresses, are elastic in nature, add less weight than other fastening methods, and give smoother contours to the finished product. In addition, they permit the fabrication of complex shapes; seal against water, dust and air; are applied rapidly; prove adaptable to most manufacturing procedures, and allow non-destructive replacement.

There are four basic classes of modern adhesives:

1. Rubber-based:
   Natural rubber, reclaim, GR-S, Butyl, neoprene, nitrile and Thiokol rubbers.
2. Resin-based:
   a. Thermoplastic:
      Nitrocellulose, vinyl chloride-acetate, vinyl acetate, vinyl butyral, chlorinated rubber, cyclicized rubber, alkyd resins, acrylic resins, natural gums, rosin asphalt.

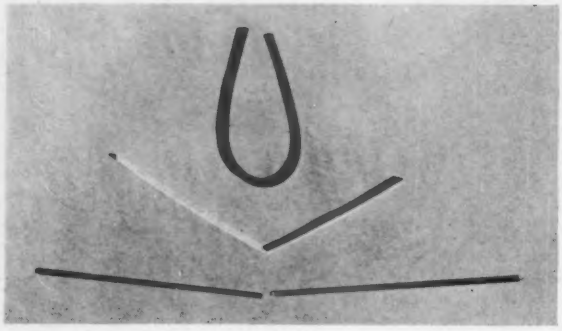


FIG. 1—Indicative of the relative flexibility of raw materials used in adhesives are, top to bottom, glass rod, plastic rod, and rubber. The rods are positioned at the angle at which they snapped.

b. Thermosetting:
Ureas, phenol-formaldehyde, epoxy, alkyd or polyester resins, furfural resins.

3. Protein and carbohydrate:
Hide glue, casein, starch, dextrin, blood albumin.

4. Inorganic:
Sodium silicate, portland cement, magnesium oxychloride.

The relative flexibility of the raw materials used in adhesives is shown in Figure 1.

Types of Rubber Adhesives

The various adhesives may be classified according to the main constituent, or according to materials with which they are used. The former method has been chosen as a convenient means for describing general properties.

Rubber in the final adhesive is usually uncured, with certain exceptions. This is unique, as rubber is cured in virtually all other commercial applications. The exceptions mentioned are certain two-part adhesives, one containing accelerator, which are mixed just prior to use, and prevulcanized latex. The various rubbers and their physical properties are shown in Table I. The properties listed are for the uncured rubbers as used in adhesives that gain strength merely by evaporation of solvent or water.

While the type of rubber is usually the major ingredient determining the property of the adhesive, other important ingredients are present. To contribute fluidity and ease of application, the solid components are dissolved in a volatile organic solvent or dispersed in water. Low boiling petroleum solvents, toluene and xylene, acetone and methyl ethyl ketone, ethyl and butyl acetate, ethylene dichloride, and ethyl and isopropyl alcohol are solvents frequently used. Latex adhesives utilize water, as do certain artificial dispersions of the dry adhesive ingredients.

Properties of each adhesive are influenced by the following modifiers:

1. Rosin and synthetic resins to impart wet strength (tack), film strength, and specific adhesion.
2. Pigments and fillers to improve tensile strength and tear resistance, impart color, improve application properties, lower cost, and increase rate of solvent release.
3. Asphalts and mineral oil for low cost, improved chemical resistance, and increased tack.
4. Rubber chemicals for special purposes such as antioxidants, vulcanizing agents, and stabilizers.

The technology of adhesive formulating covers the use of specific ingredients in the proper proportions to achieve the desired performance for each job.

Some Modern Applications

Although the modern adhesive industry sprang from the automobile builders, today there are countless additional applications. Only part of the principal uses can be described. Trim adhesives are used in fastening cloth, vinyl, or leather to asphalt-impregnated board, steel, or other surfaces. Reclaimed rubber adhesives are widely used because of low cost, ease of application, rapid gain in strength, and long bonding range.

Weatherstrip adhesives are used for fastening sponge or solid rubber to lacquered or enameled metal. Neoprene adhesives are widely used because of high strength, good adhesion, and permanence when exposed to the weather.

Insulating pad adhesives in the roof, floor, and under the hood are water-dispersed or solvent reclaim rubber adhesives. They must gain strength rapidly and have good properties at high temperatures.

Body sealers are used to fill spaces remaining after metal fabrication. Their function is to seal against passage of water, dust, or air for the life of the car. Asphalt modified with rubber is normally used because of low cost and adhesive properties to steel. Special sealers are made from vinyl plastisols and plasticized

TABLE I—TYPES OF RUBBER ADHESIVES

(Classified According to Major Raw Material)

Rubber Base	Resilience	Strength	Resistance to: Plastic Flow	Oxidation	Heat	Water	Solvent	Common Solvent
Reclaimed Natural Rubber....	Good	Good	Fair	Fair	Fair	Good	Poor	Petroleum
Natural Rubber	Best	Good	Fair	Fair	Fair	Good	Poor	Petroleum
GR-S	Fair	Fair	Fair	Fair	Fair	Best	Poor	Petroleum
Butyl Rubber	Fair	Fair	Poor	Exc.	Poor	Good	Poor	Petroleum
Polybutene	Fair	Fair	Poor	Exc.	Poor	Good	Poor	Petroleum
Neoprene	Good	Best	Best	Good	Exc.	Good	Good	Toluene
Nitrile Rubber (Buna N).....	Fair	Good	Good	Good	Best	Good	Exc.	Ketone
Thiokol (Polysulfide)	Poor	Poor	Poor	Exc.	Poor	Exc.	Best	Ethylene dichloride

Note: Other rubberlike materials include the acrylic polymers, chlorosulfonated polyethylene, polyvinyl acetals, silicone rubbers and others, but these are special purpose materials used in relatively small amounts in adhesives.

FIG. 2—Use of "disappearing" adhesive in piston ring assembly.

reclaim rubber where the performance requirements are more severe.

The largest volume of Thiokol rubber is used in the aircraft and marine industries because of its unusual combination of excellent solvent resistance, oxidation and light resistance, low temperature flexibility, and adhesion to metals and wood. Two-part liquid sealers which cure to a solid rubber after application are used in aircraft wing sections so that fuel can be stored there. The same sealer is used in pressurized cabins to make them airtight. Nitrile rubber adhesives and sealers are used where solvent resistance and adhesion to metal are required, but low temperature requirements are not severe. Silicone sealers are used near the engine and exhaust where temperatures of 300 to 500° F. are encountered.

In marine applications, liquid Thiokol sealers are used for sealing between the timbers of the decks of aircraft carriers, and in the hulls of small boats. Their outstanding properties include ease of application, cure at 70° F., no shrinkage, flexibility in arctic or tropical temperatures, and no adverse effect from sunlight, fresh or salt water.

Commercial building and the rapidly growing "do-it-yourself" applications provide uses for many rubber adhesives. Wall tile adhesives use rubber because of its elasticity, high adhesive strength, and excellent resistance to water and oxidation. Reclaimed rubber and GR-S are most commonly used for cost reasons. Application of ceramic tile is now cheaper and better with a rubber-based mastic, where formerly only Portland cement was used.

Rubber floor tile adhesives are easy to apply, gain strength rapidly, age well, and allow the floor tile to change in dimension without failure. Wallboard adhesives may be asphalt-rubber mixtures, and have the same advantages as the floor tile adhesives.

Most caulking compounds ordinarily contain linseed or other drying oils, but become brittle upon aging. Caulking compounds now available made from Butyl rubber and solid Thiokol rubber remain flexible even after outdoor aging, and will stretch and retract with changes in the dimensions of wood and metal building materials.

Sink and counter tops made of Formica, Textolite, and other plastic laminates may be installed by the home owner with new neoprene-based adhesives. They are applied by brush, have a long bonding range, and make a strong durable bond. General purpose adhesives for home workshop and repair work are also available.

Designing an Adhesive for a Specific Application

Example: Automotive Weatherstrip Adhesive

1. Materials to be fastened—GR-S or natural sponge rubber weatherstrip to lacquer.
2. Method for applying adhesive—roll coater.
3. Conditions for applying weatherstrip:
   a. Brush coat on door (lacquer) followed by 10 minutes air dry before bonding.
   b. One coat of adhesive on weatherstrip followed by 10 minute dry @ 130° F.
   c. Second coat of adhesive on warm weatherstrip (8 feet long) and begin to bond in 30 seconds.
   d. Bond completed in 2½ minutes. Roll bond with roller.
4. Requirements for immediate strength:
   a. Must hold weatherstrip down immediately after application.
   b. Doors closed in 10 minutes, car through water test, 3-5 min.
   c. Car through dry-off oven in 30 minutes (180° F.) and through paint drying oven (180° F.) in 60 minutes.
5. Performance requirements during life of the car:
   a. Must withstand deformation of weatherstrip upon repeated closing of door.
   b. Must withstand constant stress when door is closed.
   c. Must not fail when exposed to alternate wet and dry conditions.
   d. Must not fail at temperature extremes of 180° F. to —10° F.
6. Must supply a suitable repair adhesive.

Adhesives are widely used in laminating packaging materials, and for package sealing. Those based on reclaimed rubber are used in military packaging because of rapid gain in strength and good water resistance. Butyl rubber, GR-S, and natural rubber are used for laminating bottle caps, plastic-aluminum foil, and cloth-plastic films, used in decorative packages.

Stoves, refrigerators, television sets and air conditioning units all require adhesives for sealing against air and moisture, fastening insulation and sound deadening pads, and even for fastening metal and wood in their construction. The electrical industry requires coatings and "potting compounds" with good dielectric proper-

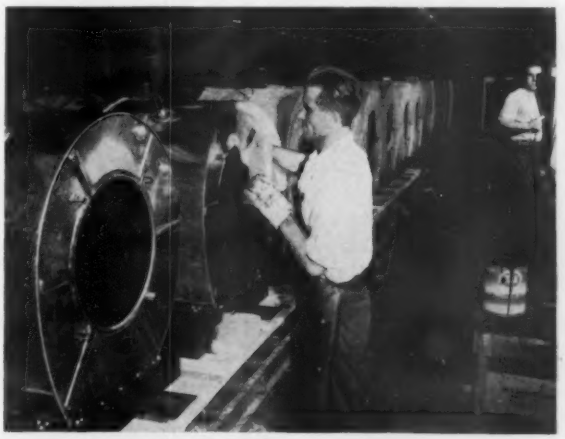


FIG. 3—Bonding fibrous glass insulation to clothes dryers.

FIG. 4—Bonding rawhide clutch faces to aluminum alloy die castings in clutch assembly.

ties, low shrinkage, and good moisture and age resistance. Liquid Thiokol products fulfill these requirements.

The shoe industry uses many latex and solvent natural rubber and neoprene adhesives, utilizing their rapid strength and durability to good advantage. Artificial suede for women's shoes and handbags are made with rayon flock adhered to a cloth backing with natural rubber or neoprene adhesive. Vinyl handbags are best fabricated with adhesive because of the poor tear resistance of some vinyl films when stitched. Heat-reactive patches for clothing are coated with a heat-sensitive adhesive.

Some Specific Applications

Numerous 3M adhesives have been developed for regular and special applications, and it is believed that some of these will be of interest. They are indicated in the accompanying illustrations.

An example of an unusual adhesive application is the

FIG. 5—Bonding supported vinyl to metal.

FIG. 6—Application of adhesive to pyroxylin-coated cloth.

use of a "disappearing" adhesive in piston ring assembly (Figure 2). The adhesive holds the three-piece ring together during assembly and then is dissolved by engine oil after about 500 miles of operation permitting high efficiency, three-piece operation of the ring. During assembly, however, handling a one-piece ring permits reductions in labor costs.

Fibrous glass insulation is bonded to clothes dryers with 3M's EC-404 (Figure 3). The insulation is bonded immediately after adhesive application and is allowed to air dry at room temperature.

Adhesive is also used to bond rawhide clutch faces to aluminum alloy die castings in clutch assembly (Figure 4). In this case, the adhesive (3M EC-1099) is brush applied and the assembly is then placed in a custom-built bonding fixture and subjected to 375° F. and 60 psi pressure for 1½ minutes to complete the bond.

Another interesting application is in the bonding of vinyls to metal (Figure 5). Here the adhesive (EC-880) is sprayed to metal with pressure pot and gun, given a three-minute open time, and then supported vinyl is bonded to the metal. Drying is accomplished at room temperature. The method is fast, since it joins the metal, vinyl and blue wadding in one operation. It

FIG. 7—Bonding of weatherstrip to doors of automotive vehicles, such as funeral cars or ambulances.

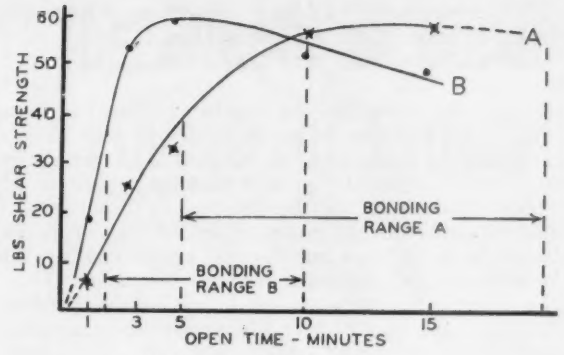


FIG. 8—Fisher tensile test.
A—GR-S Adhesive; B—Neoprene Adhesive.

enables radical bends, contours and the stretching of material to insure a good finished appearance.

Figure 6 shows the application of EC-880 to pyroxylin-coated cloth. The material is roller coated and then used to make camera bellows and for covering camera cases to give a leather grain effect.

The bonding of weatherstrip to doors of funeral cars and ambulances is done with 3M's EC-711 (Figure 7). The adhesive is hand applied with a hand pump gun, then brushed out to approximately 5 mil thickness and given a one minute open time before the weatherstripping is applied.

Testing Methods for Adhesives

A description of specific tests for determining the application properties, strength and permanence, as well as analytical tests for composition, may be found in the "A.S.T.M. Standards for Adhesives" and in Federal Specification MMM-A-175.

Individual tests copying service conditions as closely as possible are often designed to guide adhesive development work. This places the burden of proof of performance on the adhesive supplier rather than on the customer. However, wherever possible, the supplier likes to share this responsibility with the customer, as the latter has the primary control over how the adhesive will be used.

Certain characteristic tests are run on new adhesive products so their performance may be compared with existing commercial products or with customer's specifications. The method of application is determined from the customer's preference, or is part of the supplier's design service. Use of a brush, spray gun, roller coater, dipping, trowel, dry film, or caulking gun are application methods commonly used. Tests are usually visual and comparative, preferably on the material to be fabricated.

Following the application of adhesive to surfaces to be bonded, there is usually a minimum waiting period to allow evaporation of part of the volatile solvent. This provides a stronger immediate bond and stronger final bond by reducing volume shrinkage. There is usually also a maximum time beyond which bonds of lower strength are obtained, due to loss of tack and inability of the adhesive films to weld together under contact or relatively low pressures. The Fisher Tensile Test is often used as a comparative measure of bonding range (as typified by Figure 8). Effective bonding range is influenced by the assembled parts, and so must be determined for each adhesive problem.

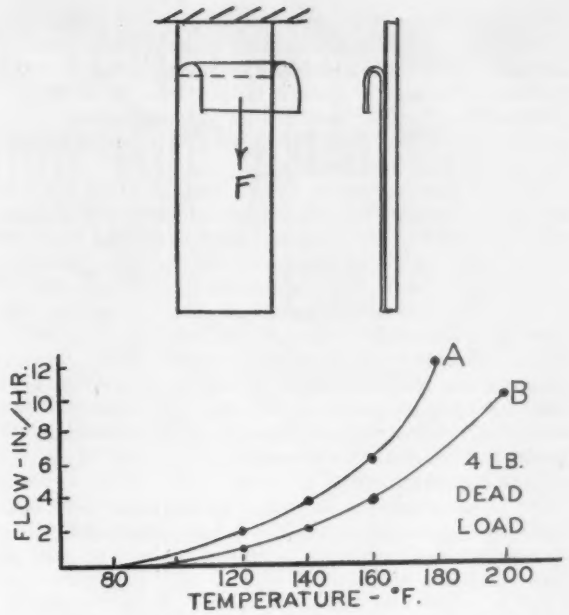


FIG. 9—180° peelback and dead load tests.
A—Instantaneous reading, lbs./inch.
B—Plastic flow, inches/hour.

Measurement of effective adhesion-ultimate strength depends upon the stresses placed on the component parts in service. One method is the 180° peel-back test in which two flexible sheet materials, or a flexible and a rigid material, are bonded, allowed to dry to constant weight, and peeled apart in a Scott tensile tester (see Figure 9). Another method, adaptable to rigid sheet materials such as metals or plastics, is a shear test on a measured bonded area. A third is a "cleavage" test where two rigid materials are bonded and subjected to a

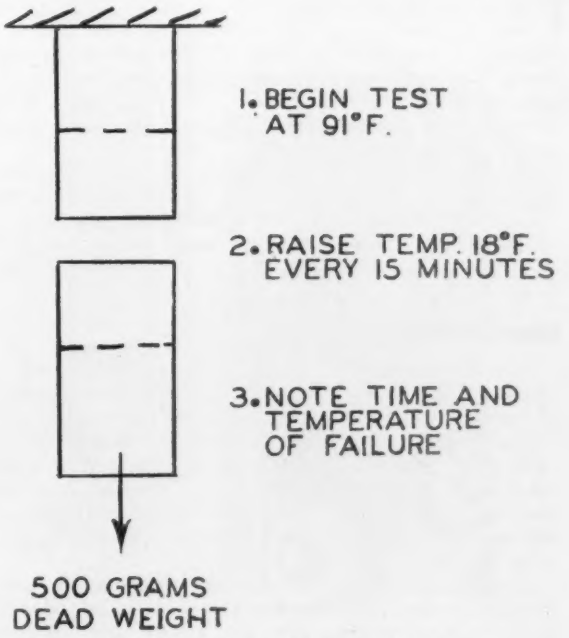


FIG. 10—Fisher softening point test.

bending moment, either constant load or increasing load.

Since many bonds are subject to small but continual stresses (both at normal and elevated temperatures), resistance to plastic flow is important. It is usually measured by the 180° peelback or shear test, modified to provide a small constant load in place of an instantaneous increasing load (see Figure 9).

The Fisher Softening Point Test is often used to measure adhesive strength at high temperatures (Figure 10). The 180° peel test with a small dead load is a more severe test which measures about the same property when flexible materials are bonded.

Since rubber adhesives are organic materials, they may be affected by exposure to light, heat, water or other influences which may surround them. One or more of the tests described above may be used to measure adhesive properties both before and after exposure to one or more of these influences. For example, 180° peelback test of canvas to metal may be used to measure almost any aging effect.

In place of natural conditions of exposure, accelerated aging tests are often designed to obtain the desired information more quickly. Some of these test methods are:

1. Exposure to Light: Infra-red and ultra-violet lamps, S-1 sunlamp.

2. Fadometer, Weatherometer (for light and weather).

3. High Temperatures and Oxidation: Air oven (at 122°, 140°, and 160° F. and higher temperatures), Oxygen Bomb.

4. Water: Water immersion, 100% relative humidity.

5. Solvents, Acids, Alkalis: Immersion, for various periods of time in the appropriate liquid.

6. Corrosion or other weakening effects on the bonded materials.

More exact measurements may be made on free films of the adhesive. The properties measured may include tensile strength, modulus, Shore hardness, permanent set, or others depending on its application.

Since rubber adhesives are solutions or dispersions of high molecular weight polymers in solvents or water, changes in the physical and chemical equilibrium between the polymer and dispersing medium can occur. These changes may lead to a change in application qualities. Brookfield and MacMichael Viscometers are convenient methods for measuring solution viscosity. These measurements, taken over a desired period of time, can determine the viscosity stability of a given adhesive.

Accelerated tests include storage of the liquid adhesive at 80°, 122° and 140° F. and periodic viscosity measurements. There is no general rule for correlating elevated temperature aging with normal aging. However, this method is useful for comparing materials of similar composition.

Looking Ahead

Applications of rubber-based adhesives will continue to grow. Constant testing, rigid adherence to quality standards and a continuing research program are bringing out new products and finding new applications almost daily. The users of adhesives, too, are constantly gaining knowledge and skill in using adhesives. They contribute immeasurably to the growth of adhesives and provide a constant spur for new product development.

Removal of Persons from Mill Rolls

FOR a number of reasons mill accidents have become less frequent in the rubber industry. One reason is that many companies do more of their mixing in Banburys. Another reason is that a better job of training the operators is being done. The operators are given, along with other training material, written instructions which include safe operating procedures.

However, once in a while, regardless of all the guards and education provided, an accident will occur. In this case it is best to have some established procedure to insure the minimum amount of burns and suffering by quick removal of a person caught in the bank of stock or the bite of the rolls.

Difference of Opinion

A few companies advocate reversing of the mill in all cases while some other companies will allow reversing of the mills only as the last resort to remove the individual quickly. A large majority of the balance of the rubber companies have a safety crew organized to spread the rolls of the mills as quickly as possible to release the individual caught. The details of the methods used will vary somewhat but the principle is about the same in all cases.

First of all, the crews will have available for use a kit of tools that will include all or part of the following items: wedges, sledges, pry bars, knives, asbestos cloth, hydraulic jacks, a stretcher and hose for refrigerated water. In most cases this equipment will be located in a special box in the mill area. In at least one case it has been mounted on a cart to be easily transported to the area where it might be needed by the safety crew. The safety crews are organized on each shift within the departments using mills. The men are chosen for their ability to think and act correctly in an emergency and their willingness to serve. In many cases the crews hold regular drills to familiarize themselves with the duties of each crew member. This increases the speed and efficiency of the crew. Most crews can accomplish the removal of an individual in about two minutes and sometimes get the time down to around one minute.

Duties Vary Somewhat

The duties of the crew members will vary somewhat, depending on the number of men available to serve and the equipment used, but in general will break down somewhat as follows: Two men to back off the screws and cut away the bank of rubber; two men to either place the hydraulic jacks in position or the wedges, whichever one is used; one man to get a stretcher and notify the dispensary; one man to connect refrigerated water and control the person caught. In some cases, a man is stationed at the reset button to prevent any one restarting the mill or reversing it.

NSC Rubber Section

The Effects of Conductor Temperature on the Quality of Extruded Vinyl Wire Insulation

By E. E. GRIESSER* and M. M. SUBA†

THE properties of vinyl wire insulations which largely determine their quality are those which, for the most part, are not readily apparent. Some insulations which have an excellent outward appearance may fall far short of meeting the complex requirements usually included in present-day insulated wire specifications.

Although the fundamental properties of insulations are generally functions of specific formulations, extrusion techniques also play an extremely important role in the development and retention of these properties during use. For example, the successful extrusion of plasticized vinyl chloride or vinyl chloride-acetate resin formulations resolves itself into a matter of accurate control of several extrusion variables. The importance of obvious variables, such as compound temperature, extruder conditions, and compound homogeneity, has long been recognized by wire manufacturers. But other less obvious variables have been overlooked or neglected by many manufacturers. Notable among these is the proper control of conductor temperatures during extrusion.

Wire manufacturers have mastered the science of obtaining optimum properties inherent in specific formulations for medium and heavy extruded wire insulations which are comparable to those properties obtained from ideally prepared molded slabs. However, in extruding thin-wall insulations, manufacturers have found increasing difficulty in maintaining desired properties as wall thickness decreases. The existence of this difficulty has brought about investigation of these other variables as a means of improving the desired properties of insulation. There has been concrete evidence of marked improvement in certain physical properties of insulating materials by increasing the copper temperature. This evidence has, however, been mainly of a qualitative nature.

The importance of controlled conductor temperature also became apparent when vinyl formulations were developed for use in high temperature applications. Such applications require the retention of desired physical properties after accelerated and long time, high temperature aging. Controlled copper temperature has been found to promote the retention of properties desirable in this instance to a great extent. It still remains necessary to qualify the exactness of this control. Such an investigation may be implemented by examining a few specific properties which are desirable in particular applications.

Insulated appliance wires in many wall thicknesses are most often used in relatively short lengths. In the attachment and installation of this type of wire, cutting and stripping is a standard operation. It is evident that the ease with which an insulation may be stripped from its conductor is a function of the adhesion existing between them. This factor is of great importance in appliance wires, particularly in the case of stranded conductors such as are used in soldering operations. For the same type of wire, insulation shrinkage which is encountered during soldering operations is another important factor which must be controlled. Proper control of conductor temperature during extrusion has been known to have a beneficial effect upon these two factors, i.e., by controlling conductor-insulation adhesion (thereby facilitating stripping) and by reducing insulation shrinkage which results from soldering operations. This phase of the study is still in need of clarification.

Switchboard wire is now being made with hard vinyl chloride resin coatings, using lightly plasticized formulations. These formulations are coated in very thin walls on small gage wires, and optimum elongation and minimum shrinkage of the coatings are required. Both of these factors have been known to be dependent upon conductor preheating. However, this information has also been of a qualitative nature to date.

Appreciating the importance of controlling the conductor temperature during extrusion of vinyl insulations, the authors undertook this study. Valuable assistance in this study was rendered by the Rome Cable Corporation and the Phalo Plastics Company, both in

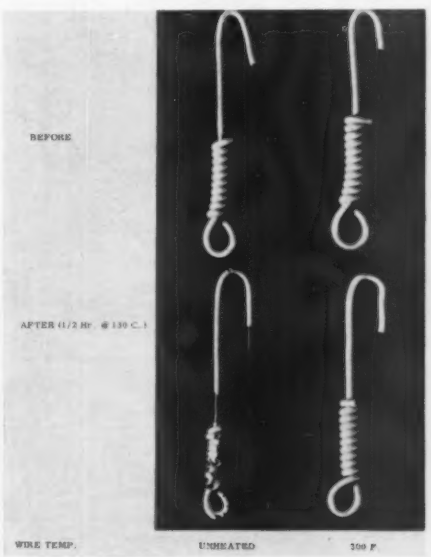


FIG. 1—Heat shock test.

Note: This article is based on a paper delivered by the authors at the Signal Corps Wire and Cable Symposium, Asbury Park, N. J., December 8, 1954.

* Development Laboratories, Bakelite Company, A Division of Union Carbide and Carbon Corporation, Bound Brook, N. J.
† Technical Representative, Bakelite Company, A Division of Union Carbide and Carbon Corporation, Hartford, Conn.

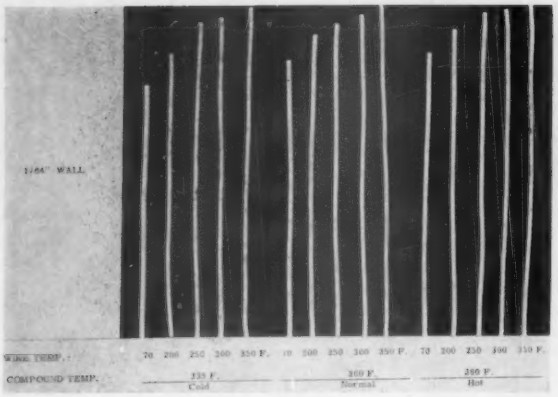


FIG. 2—Total strain—6 inches of insulation heated one-half hour at 130° C—1/64-inch wall.

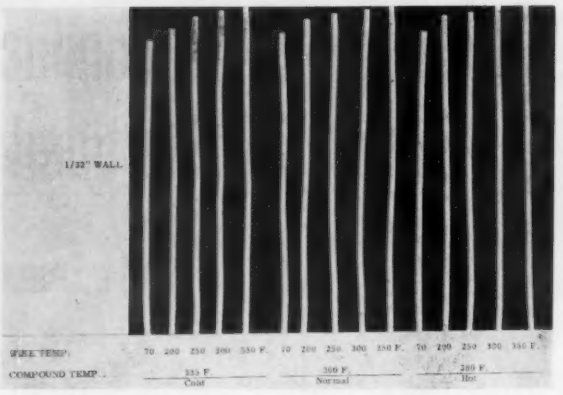


FIG. 3—Total strain—6 inches of insulation heated one-half hour at 130° C.—1/32-inch wall.

the preparation and testing of a large number of samples. The authors were hopeful that definite answers might be obtained to the question of the interrelation of conductor temperature, compound temperature, wall thickness, and the several properties which enhance the quality of vinyl wire insulations.

Procedure Employed

Three typical vinyl electrical insulating compounds were coated on No. 14 AWG solid copper wire, the temperature of which was controlled at five different intervals between room temperature and 350° F. These compounds were: (1) a DOP plasticized building wire insulation (60° C. TW); (2) a TCP plasticized 80° C. appliance wire insulation; (3) a polymeric plasticized 105° C. appliance wire insulation. The wire temperatures employed were unheated (approximately 70° F.), 200, 250, 300, and 350° F. The compounds were applied to the wire in two wall thicknesses—1/64 and 1/32 inches—and at three compound temperatures—20 to 30° F. below normal, normal, and 20 to 30° F. above normal.

The experiment was conducted with a 2-inch wire coating extruder and a low voltage, high current experimental wire preheater in which a current was passed through the wire, heating it by resistance. In this manner it was necessary to limit the wire speed to between 100 and 150 rpm in order to ensure reaching a 350° F. conductor temperature. The different compound temperatures were achieved by varying the head, barrel, and screw temperatures of the extruder. Compound temperatures were measured with a needle pyrometer and wire temperatures were measured with Tempilstiks, high temperature wax sticks with specific melting points.

Results of Tests

Heat Shock Test: The heat shock test is almost universally employed to distinguish between satisfactory and poor wire coating extrusions of vinyl compounds. This test consists of exposing a slightly strained specimen to a temperature somewhat above the thermoplastic strain release temperature for a short time. Fail-

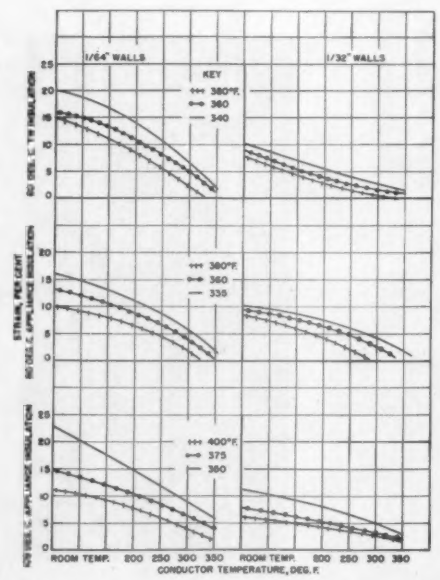


FIG. 4—Effect of conductor and compound temperatures on insulation strain.

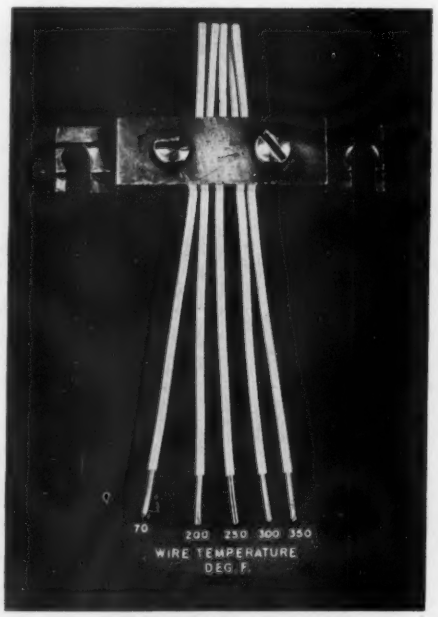


FIG. 5—Effect of strain on shrinkage, samples ready for soldering.

ure of the test is indicated by the appearance of cracks and gaps in the insulation due to strain release.

The method adopted by the authors was to stretch a one-foot length of insulated wire slightly to remove kinks, bend the wire in half and wrap one-half of the wire tightly around the other half for at least eight close turns. The finished specimen was then placed in an air circulating oven at 130° C. for one-half hour. This time and temperature was sufficient to release strains in all three compounds. The results were quite conclusive: *Heat shock failures occurred in every instance where compound below normal in temperature was applied to unheated conductors.*

The insulations which failed appeared to tear themselves apart while in the oven. A photograph of a pair of heat shock specimens before and after heating is shown in Figure 1. The fact that heat shock failures occurred only under the worst coating conditions implies that this test by itself is not a critical indication of quality.

Shrinkage: Shrinkage is of importance in wire coatings, since insulations which shrink with age or during soldering, leaving exposed conductor, are unsatisfactory. Shrinkage of thermoplastic insulation is due to the strain imparted during wire coating which was found to be directly related to conductor temperature and compound temperature. Shrinkage was measured by exposing six-inch specimens of both insulated wire and stripped insulation in an air circulating oven at 130° C. for one-half hour and measuring the total shrinkage from both ends. The shrinkage of stripped insulation is a measure of total strain content which may be encountered during soldering operations. The shrinkage of insulation on wire is less than the total strain due to a certain amount of adhesion. This amount of shrinkage is likely to be encountered during aging.

During these experiments, strain was found to be considerable and was virtually impossible to eliminate. The strain content of all three compounds decreased almost linearly with increasing conductor temperatures. Strain was also reduced with increased compound tem-

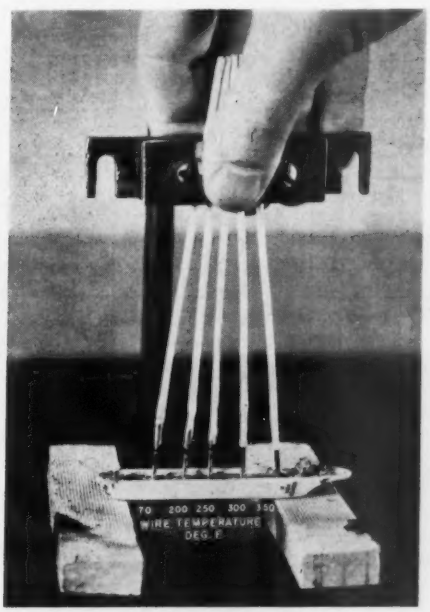


FIG. 6—Effect of strain on shrinkage after soldering.

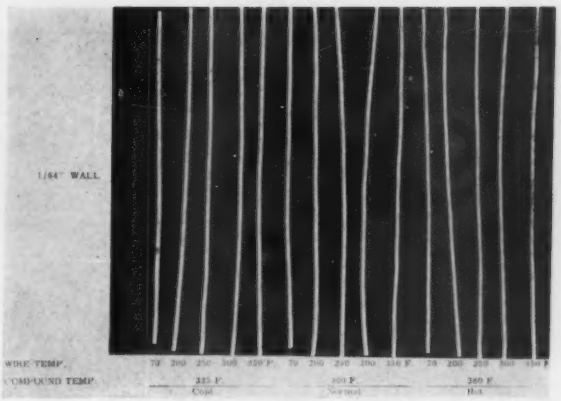


FIG. 7—Shrinkage of insulation of wire—6 inches of insulated wire heated one-half hour at 130° C. —1/64-inch wall.

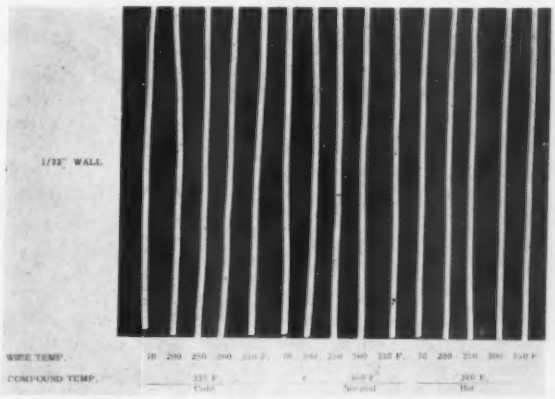


FIG. 8—Shrinkage of insulation of wire—6 inches of insulated wire heated one-half hour at 130° C— 1/32-inch wall.

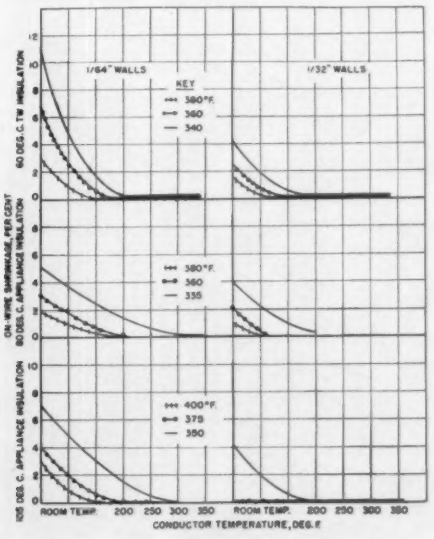


FIG. 9—Effect of conductor and compound temperatures on insulation shrinkage.

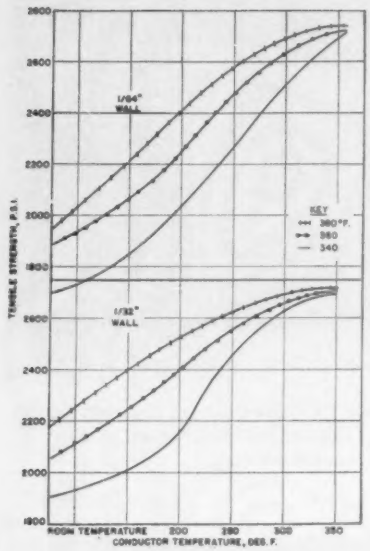


FIG. 10—Effect of conductor and compound temperatures on tensile strength of 60° C. TW insulation.

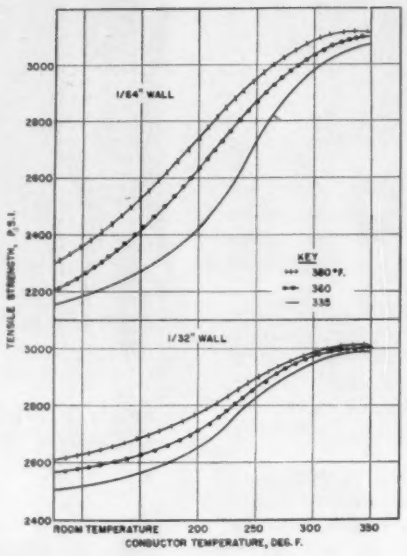


FIG. 11 — Effect of conductor and compound temperatures on tensile strength of 80° C. appliance insulation.

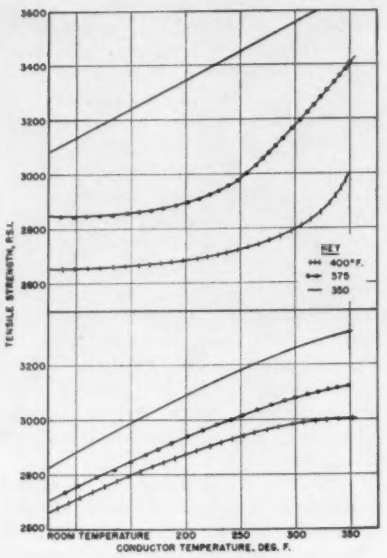


FIG. 12—Effect of conductor and compound temperatures on tensile strength of polymeric 105° C. appliance insulation.

peratures and wall thicknesses. The results obtained with the TCP plasticized 80° C. appliance wire compound were typical of the results obtained with all three compounds. These results are shown in Figures 2 and 3. Note that a small amount of strain still remains even when hotter - than - normal compound was applied to the hottest conductor. By plotting strain versus copper temperature and extrapolating to zero per cent strain, it is possible to arrive at a temperature of 400 to 450° F., at which it would appear that no strain would be present. However, it is not necessary to preheat to this temperature as strains of 5 per cent or less are not harmful and would be so difficult to remove as to render their elimination impractical. Curves of strain versus copper temperature for all samples are shown in Figure 4.

The effect of strain on shrinkage during soldering is shown in Figures 5 and 6 for a typical series of coatings before and after a 5-second dip in molten solder at 600° F. The samples represent the 1/64-inch wall coatings of TCP plasticized compound applied with normal compound temperature (360° F.) and increasing copper temperatures from room temperature to 350° F. (left to right).

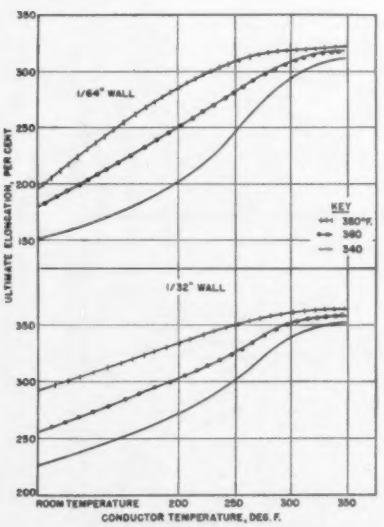


FIG. 13—Effect of conductor and compound temperatures on elongation of 60° C. TW insulation.

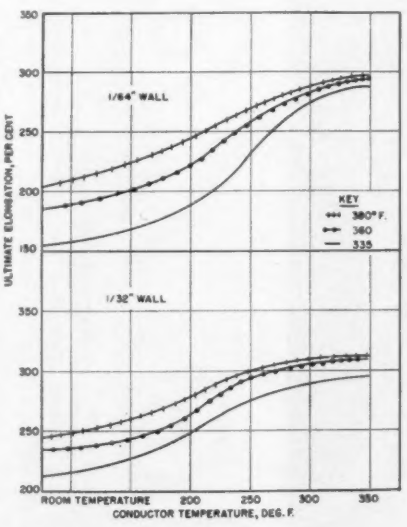


FIG 14—Effect of conductor and compound temperatures on elongation of 80° C. appliance insulation

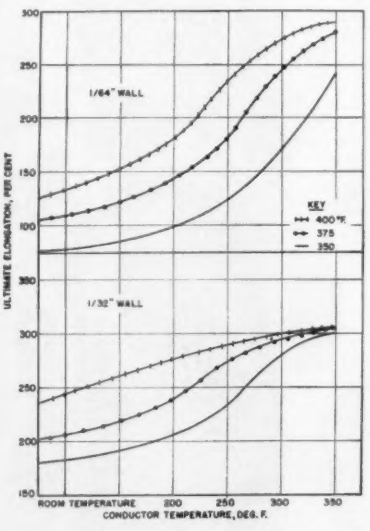


FIG. 15—Effect of conductor and compound temperatures on elongation of polymeric 105° C. appliance insulation.

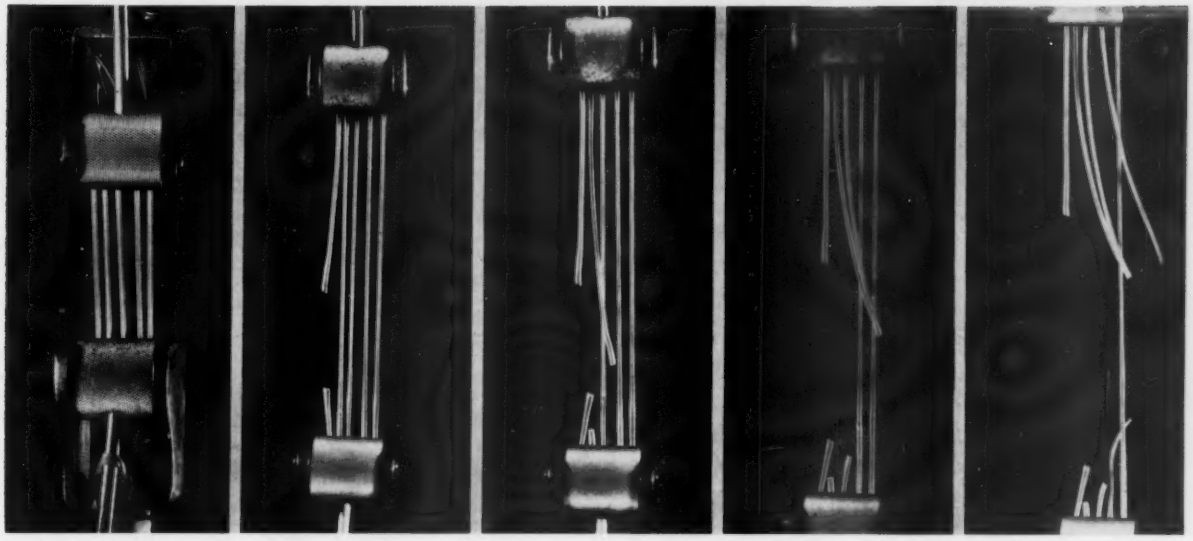


FIG. 16—Unstretched *FIG. 17—115%* *FIG. 18—150%* *FIG. 19—180%.* *FIG. 20—250%.*

Effect of conductor temperature on per cent elongation.

While strain is difficult to remove entirely, shrinkage on wire can be eliminated readily by heating the conductor to 200 or 250° F. even when lower-than-normal compound temperatures are employed. Since on-wire shrinkage is that portion of strain that is not restricted by adhesion to the wire, it was affected by the same variables as strain although it is not a reliable measure of strain content. Thus, it decreased with increasing conductor temperature, compound temperature and thickness. This is shown in Figures 7 and 8 which are photographs of TCP plasticized coatings in both wall thicknesses showing shrinkage after one-half hour at 130° C. Curves of on-wire shrinkage for all compounds are shown in Figure 9.

Tensile Properties: Tensile properties of vinyl insulations (measured by modified ASTM Test D-412-51-T) are greatly affected by the degree of conductor preheating employed, which accounts for the difference sometimes observed between the tensile properties of compression molded slabs and extruded insulation. It has been observed that properly molded slabs and properly extruded insulation of the same compound have the same tensile strength and ultimate elongation. Insulations extruded onto inadequately heated or unheated conductors have lower tensile strengths and elongations than compression molded slabs.

The effects of conductor and compound temperatures on the tensile strength of the three compounds are shown in Figures 10, 11, and 12. Note that tensile strength increases with increasing conductor temperature to some optimum value which is achieved at approximately 300° F. conductor temperature. Increasing compound temperatures also had a slightly beneficial effect, except on the 105° C. polymeric plasticized compound which did not behave in the same manner as the monomeric plasticized compounds.

Elongation, like tensile strength, increases with increasing conductor and compound temperatures and appeared to reach a maximum value in most cases at a conductor temperature of approximately 300° F. This effect is shown in Figures 13, 14 and 15.

A typical example of how conductor temperature affects elongation is shown in Figures 16, 17, 18, 19 and 20. These photographs show the progressive stretching of a series of five samples of polymeric plasticized insulation (1/64-inch wall) prepared with normal compound temperature at five different conductor temperatures. The insulation has been split to show the surface which was adjacent to the conductor. Figure 16 shows the series of five insulations in place in the jaws of a universal tensile tester before stretching. In Figure 17 the specimens have been elongated 115 per cent and the first sample, coated on unheated wire, has

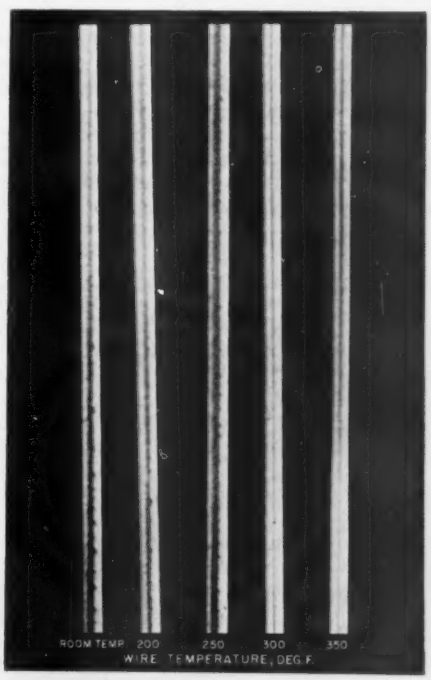


FIG. 21—Close-up view of specimens in Figures 16 to 20 at 100% elongation prior to the breaking of the first sample.

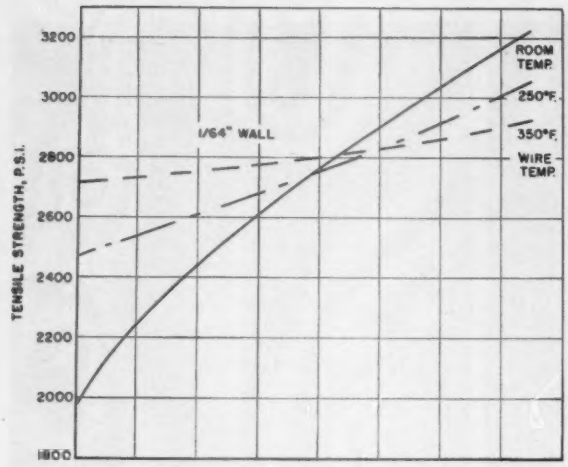


FIG. 22—Effect of conductor temperatures on tensile strength of 60° C. TW insulation during 100° C. oven aging—1/64-inch wall.

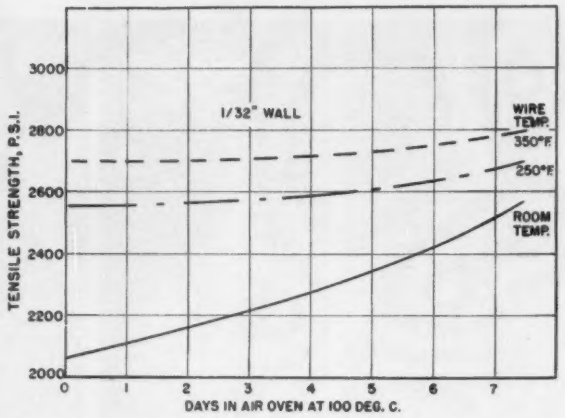


FIG. 23—Effect of conductor temperatures on tensile strength of 60° C. TW insulation during 100° C. oven aging—1/32-inch wall

broken. Figure 18 was taken at 150 per cent elongation and the second sample, coated on 200° F. wire, has also broken. Figure 19, at 180 per cent elongation, shows that the third sample, coated on 250° F. wire, has now failed. In Figure 20, the samples have been stretched 250 per cent and the fourth sample, coated on 300° F. wire, has failed. At this point, only the fifth sample, coated on 350° F. wire, is intact. This sample failed at 280 per cent elongation.

The reason for these differences in tensile strength and elongation is shown in Figure 21, which is a close-up photograph of the preceding specimens at 100 per cent elongation, just before the first sample broke. Note the presence of numerous cracks on the surface of the insulation which was adjacent to the conductor. These inner surface cracks, which do not appear when the conductor is heated to 300° F. or higher, are responsible for the lower tensile strengths and elongations obtained with unheated or insufficiently heated conductors. *These cracks cannot be seen unless the insulation is slit to reveal the inner surface and unless the insulation is stretched.* Naturally, these cracks are more detrimental to thin wall insulation than to heavy walls, and would also be affected to a greater extent by heavy gage conductors than by light gage conductors.

Aging: As would be expected, the effects previously described on tensile properties also have an effect on the insulation when it is aged. Both long time and accelerated aging tests were performed on all the samples prepared in this investigation. The long time tests consisted of 60 days in an air circulating oven at 102 per cent of maximum rated temperature in degrees Kelvin, as specified by Underwriters' Laboratories. The accelerated aging tests consisted of shorter times at higher temperatures as follows:

DOP Plasticized	60°C. TW	7 days at 100°C.
TCP Plasticized	80°C. Appliance	5 days at 120°C.
Polymeric Plasticized	105°C. Appliance	5 days at 140°C.

The long time aging test gave the same general results as the accelerated tests although the results were not as severe. For the purpose of this report, aging results discussed are confined to the accelerated aging tests.

The effect of conductor and compound temperatures on tensile properties after oven aging was more pronounced than on original tensile properties. Insulation which was coated on unheated conductors, and possessed

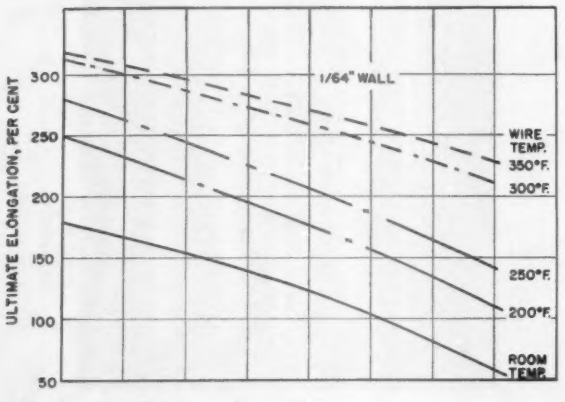


FIG. 24—Effect of conductor temperatures on elongation of 60° C. TW insulation during 100° C. oven aging—1/64-inch wall.

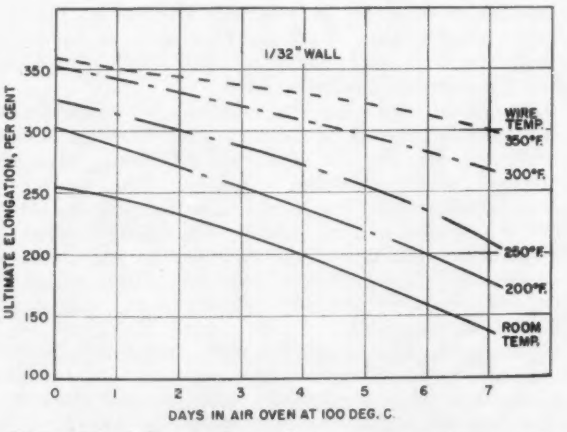


FIG. 25—Effect of conductor temperatures on elongation of 60° C. TW insulation during 100° C. oven aging—1/32-inch wall.

low original tensile strengths, showed greater increase in tensile strength during aging than insulation coated on heated conductors. Insulation coated on 300° F. or hotter conductor showed little change in tensile strength during aging. The phenomenon, as shown in Figures 22 and 23, was typical of the three compounds investigated. Here the tensile strength of the DOP plasticized TW insulation is plotted versus aging time for several conductor temperatures and both thicknesses. The rate of increase of tensile strength increased with decreasing wall thickness as would be expected, but also increased with decreasing conductor temperature and compound temperature.

Elongation was measured on aged samples which had been bench-marked prior to aging. Elongation after aging was proportional to wire temperature and decreased with decreasing wall thickness, conductor temperature and compound temperature. Again, this was typical of all three compounds, and the effect is shown in Figures 24 and 25 for the 60° C. TW insulation. Note that elongation during aging decreased at a fairly uniform rate for all samples of the same thickness. This had the effect of improving the percentage retention of original elongation of the compound coated on the hottest conductors.

For example, the insulation coated on 300° F. wire in Figure 25 retained 73 per cent of its original elongation after aging 7 days at 100° C., whereas the same insulation coated on unheated wire retained 54 per cent of its original elongation. This is shown in Figure 26, where the effect of conductor temperature and wall thickness on the retention of original elongation is shown for the 60° C. TW insulation after seven days aging at 100° C. This means that the compound coated on the unheated conductor would fail Underwriters' requirement of 65% minimum retention after aging.

In order to improve retention of elongation after oven aging, it was necessary to attain the highest possible original ultimate elongation. This was achieved by adequately heated conductors to 300° F. or higher, employing optimum compound temperature (as given by the manufacturer), and increasing wall thickness. Naturally, in a given wire construction, the wall thickness is fixed. However, much can be done by concentrating on the first two variables, compound and conductor temperatures.

Stripping: As would be expected, overheating conductors causes adhesion which makes the removal of insulation from the wire difficult. While it was observed that stripping force became greater with increasing conductor temperature, it was still possible to strip all of the samples by hand. However, it is believed that conductor temperatures above 400 or 450° F. would cause complete adhesion, making separation of the insulation from the conductor virtually impossible. Attempts to measure stripping force with a special jig, which held the insulation in a Scott tester, indicated that forces in the range of 1 to 7 pounds per inch of length were encountered, and these were not exceeded. *Moreover, the results indicate that adhesion of a given compound can be controlled by controlling the conductor temperature.* This is of prime importance to manufacturers of appliance wire which is generally cut to length and the ends stripped by automatic machines which are very sensitive to the degree of adhesion.

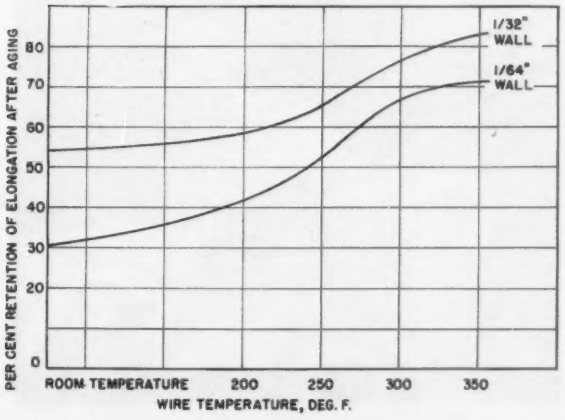


FIG. 26—Effect of conductor temperatures on retention of elongation of 60° C. TW insulation after aging seven days at 100° C.

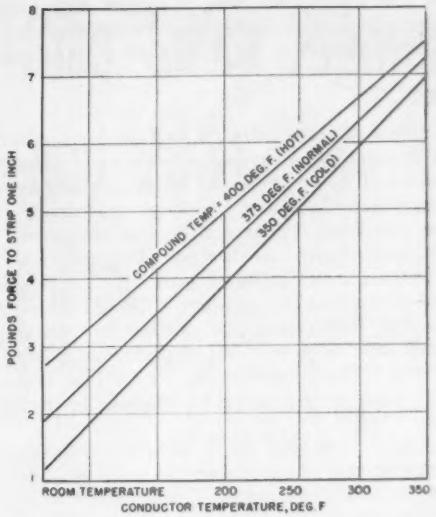


FIG. 27—Effect of conductor and compound temperatures on stripping force of 105° C. appliance insulation.

The effect of conductor and compound temperatures on the stripping force of the polymeric plasticized 105° C. appliance wire compound is shown in Figure 27. Note that stripping force increases with increasing compound and conductor temperatures. The same curve was found to apply to the TCP plasticized 80° C. appliance wire compound. This effect is coincidental, as compound formulation is believed to increase or decrease this effect. Anyone wishing to correlate adhesion with conductor temperature should investigate stripping forces for each different compound employed. It is also possible that tinned conductors will have a somewhat different effect on adhesion than bare copper conductors, and this should also be investigated by manufacturers who coat tinned-copper wire.

Other Tests: A modified ASTM low temperature brittleness test (ASTM D-746-44-T) was employed in this investigation in an effort to determine the effect of conductor temperature on low temperature properties; however, no significant difference was found. In this modified method, 1½-inch tubes of insulation were substituted for the conventional 1½ x ¼ x 0.075 inch specimens used.

High temperature deformation (conforming to the "Standard for Thermoplastic Insulated Wires" of Underwriters', Inc.) was also investigated. However,

little or no correlation was obtained and hence the results are not discussed. The test involved was Underwriters' deformation at 120° C. with a 500 gram load.

Conclusions

The effects of conductor preheating and other variables on the quality of extruded vinyl wire coatings have been discussed in great detail. Their importance cannot be overemphasized. It was seen that heat shock failures could be overcome by extruding the compound at an optimum temperature or hotter. However, very little, if any, improvement in other properties is achieved by increased compound temperature without conductor preheating. For this reason, the satisfactory passing of a heat shock test does not imply optimum quality; conversely, the failure of a heat shock test does imply extremely poor or the poorest quality of extruded vinyl insulation.

An attempt was also made to show that slight conductor preheating, i.e., enough to take the chill from the wire, is not sufficient to ensure good quality. The best results in these experiments were obtained with conductor temperatures of 300 and 350° F. It will be recalled that little improvement was made at temperatures above 300° F. Hence it is recommended that *conductors for vinyl insulations be heated to at least 300° F.* to ensure good quality as determined by optimum physical properties such as maximum tensile strength and elongation and minimum shrinkage. This has been amply demonstrated in the industry in the case of switchboard and appliance wires where thin walls of 10 to 16 mils are coated on small conductors, such as No. 18 to No. 24 AWG, at high wire speeds. It has been found by numerous wire and cable companies who make these types of wires, that conductor temperatures of at least 300° F. are necessary to meet the specification requirements for shrinkage, tensile properties, and aging.

It was also shown that adhesion of insulation to conductor for a given compound can be controlled by controlling the conductor temperature. Several cases are known where manufacturers of appliance wire have installed conductor preheating devices to control adhesion in order to improve the performance in automatic stripping machines.

The design of adequate wire preheaters is not intended to fall within the scope of this paper. Resistance type preheaters, where a heavy current is passed through the wire as a means of heating, have been found to be satisfactory for small gage wires (No. 20 AWG and smaller). However, this method does not work adequately with larger sizes at commercial coating speeds. Gas flame or induction preheating are other possibilities. Much can be done toward the development of adequate wire preheating equipment to fill a real need of the industry.

ACKNOWLEDGMENT

The assistance of the Rome Cable Corporation and the Phalo Plastics Company in the preparation of samples is gratefully acknowledged.

Black Light Solves Fuel Cell Coverage Problem

ONE of the major production problems of fuel cell manufacturers is how to prevent the dispersion of aromatic fuels through the cell walls. Many of the larger manufacturers today use liquid nylon to serve as a barrier to this dispersion. To obtain complete and adequate coverage of fuel cell walls, as many as three coats of nylon are applied. Generally, a visible dye is added to one or more of the coats so both the operator applying the nylon and the inspector can check the thoroughness of the application.

Unfortunately, however, it has proved that adding sufficient dye to the nylon formula to make the flaws distinguishable affects the efficiency of the nylon itself. Yet, without some visible means of inspection, three coatings did not guarantee complete coverage of fuel cells. At the Los Angeles plant of Firestone Tire & Rubber, where the manufacture of fuel cells is an important operation, a laboratory and inspection department tool—black light—was moved onto the production line to solve the coverage problem.

A minute quantity of fluorescent additive — less than 1% — was added to the liquid nylon being used for the first coat. Application is performed under black light so the operator can easily spot areas not covered, due to their lack of fluorescence. In the second application, a non-fluorescent nylon was applied, and the fuel cells inspected under black light. Any fluorescence indicated lack of complete coverage in the second operation. One hundred percent coverage is thus assured in each application.

Firestone reports considerable savings with this new method in application time, inspection time and rejects. Only one inspector is required now for every three production workers as against the former use of one inspector for each processor. Rejects due to inadequate coverage have been eliminated completely.

Black lights used at Firestone were installed by Ultra Violet Products, Inc., of South Pasadena, California. Completely harmless to the eyes and skin, they can be used under normal factory lighting conditions and do not require completely darkened areas. Workers report no eyestrain or fatigue.

In coating fuel cells to insure non-leakage, liquid nylon with fluorescent additive is painted on alternate layers of rubber to assure complete coverage.

Comparison of Fine Particle Size Silica Pigments (Hi-Sils 101, 202 and 233)

By RALPH F. WOLF and CURTIS C. STUEBER

Columbia-Southern Chemical Corp., Barberton, Ohio

SEVERAL years ago, the Columbia-Southern Chemical Corporation introduced to the rubber industry the first practical fine particle size reinforcing silica pigment ever offered at a reasonable price *(1)*. This was the pigment originally called simply "Hi-Sil" but now designated Hi-Sil 101. Continued research and development work on silicas resulted subsequently in the commercial introduction of an improved reinforcing pigment at a slightly higher cost. This was Hi-Sil C or Hi-Sil 202 as it was eventually called.

Recently, another new Hi-Sil has been announced, Hi-Sil 233. This retains the improved properties of Hi-Sil 202 and is offered at a lower price than either Hi-Sil 202 or Hi-Sil 101. This new fine particle silica is made by altering some of the steps used in production of Hi-Sil 202. This has not caused any change in the excellent reinforcing properties of this older silica but has, in some respects, improved them. At the same time, the changes have resulted in certain production economies which can be passed on to the consumer. As a result, Hi-Sil 233 is the lowest priced reinforcing silica of high quality ever offered anywhere in the world.

Hi-Sil 233 is a hydrated silicon dioxide having a particle size of 0.022 micron as measured by the electron microscope. This particle size, which is the same as that of Hi-Sil 202, is equal to that of HPC carbon black and is somewhat smaller than that of EPC. The specific gravity of Hi-Sil 233 is 1.95, the same as that of 202. It has a slightly lower pH and a somewhat higher silica content than 202. For convenience, a comparison is made in Table I of typical chemical and physical properties of Hi-Sils 101, 202 and 233.

Data published two years ago *(2)* showed that Hi-Sil 202 produced a higher level of physical properties in all elastomers than did Hi-Sil 101. Its advantages showed up most strikingly in the various synthetic rubbers. Results obtained with Hi-Sil 233 duplicate those produced by the more expensive 202. That is, properties imparted by 233 are much better than those of 101 even though 233 is a lower cost material.

Direct comparisons have been made between the three Hi-Sils in several elastomers. Results of these comparisons will be discussed below. In some cases, slightly more activation is required for 202 and 233 than for 101 because of their higher surface area.

TABLE I—CHEMICAL AND PHYSICAL PROPERTIES OF THE HI-SILS

	Hi-Sil		
	101	202	233
Color	White	White	White
Bulk density, lbs./cu. ft.	8	8	10
Specific gravity	1.95	1.95	1.95
Average particle size, microns	0.030	0.022	0.022
B.E.T. surface area, sq. m./gm.	110	150	150
Refractive index	1.44	1.46	1.46
Oil absorption, Rub-in method, gms. oil/100 gms. pigment	160	180	170
pH, 5% water suspension	9.0	7.5	7.3
Heat loss, 105°C.	5	5	5
Total ignition loss, 1200°C.	10	10	10
SiO_2	85	84	87
CaO	3	1	0.5
Fe_2O_3	0.3	0.3	0.2
Al_2O_3	0.3	4.0	0.6
NaCl	1.5	1	1

TABLE II—COMPARISON OF THE HI-SILS IN NATURAL RUBBER

Smoked sheets	100.0
Hi-Sil (30 vol.)	58.5
Zinc oxide	5.0
Phenyl beta-naphthylamine	1.0
Sulfur	3.0
MBTS	0.8
DOTG	1.2
Triethanolamine	As Shown
Stearic acid	3.0

Hi-Sil	TEA	Mins. Cure at 287°F.	300% Mod.	Tens.	Elong.	Hardness	Tear lbs./in.
101	0	7.5	990	3600	620	53	660
		15	1320	3670	580	58	660
		30	1430	3660	560	57	560
		45	1430	3620	560	57	530
		60	1350	3430	560	58	480
		120	1090	3240	580	59	540
101	0.5	7.5	1420	3740	580	58	670
		15	1640	3730	540	60	570
		30	1730	3610	530	61	540
		45	1680	3530	520	61	570
		60	1570	3380	520	61	540
		120	1270	3210	550	61	440
202	0.5	7.5	630	3530	700	68	720
		15	1020	3730	620	68	760
		30	1100	3420	570	70	550
		45	1100	3370	560	72	490
		60	1070	3330	570	70	530
		120	900	3200	590	73	560
233	0.5	7.5	330	2010	620	48	350
		15	680	3500	650	55	590
		30	860	3670	640	57	780
		45	970	3770	630	60	730
		60	960	3720	630	58	730
		120	910	3580	630	64	630
233	1.0	7.5	670	3520	680	53	640
		15	870	3820	660	58	750
		30	1030	3830	640	62	770
		45	1040	3790	610	62	720
		60	1080	3760	600	65	680
		120	1050	3780	620	66	610

Comparison in Various Elastomers

Natural Rubber: Thirty volumes of each of the three Hi-Sils have been compared in natural rubber and the

TABLE III—COMPARISON OF THE HI-SILS IN GR-S 1000

GR-S 1000	100.00
Hi-Sil (30 vol.)	58.50
Zinc oxide	5.00
Phenyl beta-naphthylamine	1.00
Sulfur	3.00
MBTS	1.20
TMTDS	0.15
100°C. m.p. coumarone resin	15.00
Activator	As Shown

Hi-Sil	Activator	Mins. Cure at 280°F.	300% Mod.	Tens.	Elong.	Hard. 0″	Hard. 30″	Tear lbs./in.
101	Diethylene Glycol—3.5	15	680	2430	590	58	52	180
		20	720	2570	590	60	53	180
		30	720	2810	610	60	53	160
		45	740	2690	590	60	53	170
		60	710	2760	600	60	53	160
		90	650	2610	590	60	53	160
202	Diethylene Glycol—3.5	15	590	3110	725	68	56	300
		20	605	3215	655	72	60	300
		30	785	3235	630	72	61	290
		45	840	3140	610	74	64	280
		60	825	3090	600	75	64	280
		90	880	3080	595	76	66	275
233	Diethylene Glycol—3.5	15	380	3030	830	64	50	340
		20	445	3250	765	65	52	320
		30	460	3230	720	66	53	285
		45	495	3140	680	67	56	270
		60	495	3120	675	69	55	265
		90	525	3135	655	67	57	260
233	Diethylene Glycol—5.0	15	460	3275	735	65	52	325
		20	535	3360	715	66	53	305
		30	505	3185	680	66	54	300
		45	535	3295	660	66	55	285
		60	520	3270	655	68	55	265
233	Triethanol-amine—2.0	15	635	3300	675	67	56	320
		20	660	3310	655	68	59	305
		30	695	3200	640	68	59	280
		45	650	3275	645	70	61	285
		60	670	3225	620	72	61	270

results are shown in Table II. It will be noted that Hi-Sil 101 does not really need any amine activation with the particular accelerator combination (MBTS-DOTG) which was used. Addition of 0.5 part of triethanolamine increases the cure rate and gives slightly higher modulus and hardness.

The results show that the principal difference between 202 and 101 in natural rubber is that stocks compounded with the former have lower modulus, similar tensile strength, higher hardness and perhaps slightly higher tear than 101. It will be shown later that 202 also imparts greater abrasion resistance to soling compounds.

It will be noted that in natural rubber, 233 is somewhat slower curing than 202 when compounded in the same recipe but that an almost identical rate of cure is obtained by simply increasing the amine activator from 0.5 to 1.0 part. When stocks that cure similarly are compared, it will be seen that 233 has about the same modulus as 202—better tensile strength, higher elongation, lower hardness, and somewhat better tear. Where necessary, hardness of the 233 compound can be brought up to that of the 202 stock by a slight increase in amine activator. Hi-Sils 202 and 233 impart similar abrasion resistance to natural rubber soling as will be shown later.

The results also show a difference between 101, on one hand, and 202 or 233, on the other, that would not be expected from a consideration of the other physical properties. This peculiar difference is worthy of consideration and study by rubber compounders. It will be noted that 101 has a substantially higher modulus than 202 or 233. In carbon black compounding it is almost axiomatic that a black which produces the highest modulus in a given polymer will also give the highest abrasion resistance and the longest road wear. Road tests of the three silica pigments have repeatedly shown that 202 imparts substantially greater resistance to road wear than 101 and that 233 is definitely better than 202. The fact that two silicas give better road wear than a third which has the highest modulus, is another indication that silicas behave differently from carbon black in rubber and should not necessarily be compounded and used according to rules based on experience with carbon black no matter how lengthy that experience may be.

GR-S 1000: Thirty volumes of each of the three Hi-Sils have been compared in GR-S 1000, with the results shown in Table III. It will be noted that Hi-Sils 233 and 202 both give much higher tensile strength and tear resistance than 101. Compounds containing the former also have higher hardnesses, with 233 stocks being intermediate between 202 and 101.

Although the rate of cure of 233 is slightly slower than 202 when the two pigments are compared in the same recipe, an equal cure rate can be obtained by increasing the glycol slightly or substituting an amine activator for glycol.

GR-S 1500: The advantage of Hi-Sil 233 over 101 and 202 in properties imparted to low temperature polymers, such as GR-S 1500, is very marked, as shown in Table IV. In the comparison of 30 volume loadings it will be noted that 233 gives higher modulus, tensile strength and tear resistance than 202 which, in turn, is definitely higher than 101. In hardness, 233 loaded stocks lie between 101 and 202.

Neoprene: Twenty volumes of each of the three Hi-Sils have been compared in a simple Neoprene GN recipe, with the results shown in Table V. All of the compounds were activated with 0.5 PHR of Permalux and showed no Mooney scorch after 30 minutes at 250°F. If necessary the rate of cure can be increased further by increasing the Permalux.

It will be noted that the three Hi-Sils all give about

TABLE IV—COMPARISON OF THE HI-SILS IN GR-S 1500

GR-S 1500	100.00
Hi-Sil (30 vol.)	58.50
Zinc oxide	5.00
Phenyl beta-naphthylamine	1.00
MBTS	0.75
DOTG	1.50
Triethanolamine	1.00
Sulfur	3.00
100°C. m.p. coumarone resin	10.00
Stearic acid	3.00

Hi-Sil	Mins. Cure at 280°F.	300% Mod.	Tens.	Elong.	Hard. 0″	Hard. 30″	Tear lbs./in.
101	15	140	780	1060	50	32	250
	30	530	3020	810	54	47	330
	45	680	3060	720	55	50	300
	60	740	3020	670	56	51	280
	90	810	3170	660	57	52	280
202	15	280	3160	860	63	53	330
	30	430	3260	710	65	58	310
	45	460	3250	670	69	61	290
	60	520	3330	650	70	63	290
	90	540	3140	630	66	60	290
233	15	300	3610	860	55	47	400
	30	540	3830	690	58	52	350
	45	680	3840	640	61	56	330
	60	770	3650	600	63	57	330
	90	810	3630	580	60	56	310

TABLE V—COMPARISON OF THE HI-SILS IN NEOPRENE GN

Neoprene GN	100.0
Hi-Sil (20 vol.)	39.0
E.L.C. MgO	4.0
Zinc oxide	5.0
Permalux	0.5
PBNA	1.0
Circo oil	10.0

Hi-Sil	Mins. Cure at 287°F.	300% Mod.	Tens.	Elong.	Hard. 0″	Hard. 30″	Tear lbs./in.
101	15	340	1060	680	48	37	210
	30	860	2820	870	57	52	370
	45	990	2790	750	58	55	350
	60	1080	2770	730	60	57	340
	90	1170	2780	680	63	59	310
202	15	520	2390	940	62	53	400
	30	820	3180	880	67	63	450
	45	920	3140	820	68	64	460
	60	1030	3170	770	70	65	440
	90	1090	3170	740	70	64	370
233	15	360	1810	970	52	40	270
	30	790	3390	930	61	56	480
	45	820	3160	840	60	56	480
	60	930	3240	800	62	58	410
	90	1020	3110	730	63	59	360

TABLE VI—COMPARISON OF THE HI-SILS IN BUTYL RUBBER

GR-I 15	100.00
Hi-Sil (20 vol.)	39.00
Zinc oxide	5.00
Sulfur	1.00
Sulfasan R	1.50
TMTDS	2.00
Diethylene glycol	2.50
Paraffin	0.75
BxDC	1.00

Hi-Sil	Mins. Cure at 320°F.	500% Mod.	Tens.	Elong.	Hard. 0″	Hard. 30″	Tear lbs./in.
101	7.5	440	2060	800	59	40	180
	10	500	1980	760	61	43	170
	15	570	2010	730	61	43	170
	20	710	1980	690	61	45	130
	30	820	1940	670	62	46	120
202	7.5	330	2540	900	62	45	280
	10	380	2450	830	63	46	250
	15	470	2600	810	63	46	230
	20	630	2550	770	68	49	200
	30	720	2500	730	68	50	180
233	7.5	—	—	—	—	—	—
	10	280	2710	930	59	42	280
	15	280	2700	895	61	43	240
	20	380	2650	820	62	44	240
	30	460	2660	780	63	45	220

the same modulus but considerably higher tensile strength and tear resistance is imparted by Hi-Sils 233 and 202. Hardness of the 233 stock is lower than that of the 202 compound.

Butyl Rubber: Twenty volumes of each of the three Hi-Sils have been compared in a recipe suitable for producing non-blooming colored Butyl rubber goods. Vulcanization was accomplished by means of a combination of elemental sulfur and an organic sulfide developed in this laboratory and announced last year *(3)*.

The results of this comparison, shown in Table VI, show that 233 and 202 give much higher physical properties than 101. Hi-Sil 233 is slightly slower curing than 202 in this recipe and has lower hardness.

Preliminary work on the heat treatment of silica-loaded Butyl rubber compounds indicates that Hi-Sil 233 is much superior to 202 in this sort of process. In fact, use of 202 is not desirable in heat-treated Butyl. On the other hand, extremely interesting results have been obtained by high temperature treatment of Hi-Sil 233 loaded Butyl under proper conditions. (EDITOR'S NOTE: Some data in this respect will be published in an early issue).

Nitrile Rubber: Thirty volumes of each of the three Hi-Sils have been compared in a typical medium high acrylonitrile content copolymer, Hycar 1002. The results are shown in Table VII. It will be noted that Hi-Sils 233 and 202 both gave much higher tensile strength and tear resistance than 101, but lower modulus. Hi-Sil 233 had slightly better tensile and tear properties than 202 and slightly lower modulus. Hi-Sil 202 had the higher hardness of the three materials.

Comparison in Soling Compounds

The rubber soling industry in the United States depends upon the use of Hi-Sil for production of most of the premium quality soles that are made. This does not mean that soles made with calcium silicate, Silene EF, are not good soles. They are good, but they are definitely not in the same class as products made with Hi-Sil reinforcing silica.

The premium quality soling field is an important outlet for Hi-Sils 101 and 202. For this reason, it will be of interest to many compounders to see how the new, lower cost Hi-Sil 233 compares with the older Hi-Sils.

The results discussed show that 233, although cheaper than 101, imparts very much better physical properties, particularly abrasion resistance. The results also show it to be as good as or better than the more costly 202.

The combination of higher quality and lower cost achieved in 233 makes it possible to replace Silene EF or similar silicate pigments in medium quality soling with combinations of Hi-Sil 233 and hard clay and obtain better properties at the same compound volume cost or equal properties at lower volume cost, as will be discussed later.

TABLE VII—COMPARISON OF THE HI-SILS IN NITRILE RUBBER

Hycar 1002	100.0
Hi-Sil (30 vol.)	58.5
Zinc oxide	5.0
Agerite white	3.0
Sulfur	2.0
MBTS	1.5
TMTDS	0.5
Dibutyl phthalate	12.5
Cumar P-25	12.5
Stearic acid	1.5

Hi-Sil	Mins. Cure at 311°F.	300% Mod.	Tens.	Elong.	Hard. 0″	Hard. 30″	Tear lbs./in.
101	10	1200	2410	490	68	55	200
	15	1150	2500	500	67	56	190
	30	1140	2750	550	67	56	200
	45	1140	2640	540	66	55	210
202	10	980	3410	570	72	58	270
	15	910	3590	580	72	58	250
	30	990	3490	580	72	59	240
	45	930	3580	590	73	59	240
233	10	820	3350	620	68	55	290
	15	790	3480	630	68	56	260
	30	750	3640	660	68	55	250
	45	760	3890	670	71	56	280

TABLE VIII—COMPARISON OF THE HI-SILS IN A HIGHLY-LOADED NATURAL RUBBER STOCK WITHOUT HIGH STYRENE RESIN

No. 1 smoked sheets	100.0
Hi-Sil	80.0
Zinc oxide	5.0
Flectol H	0.5
MBTS	1.0
DOTG	1.6
Sulfur	3.0
Triethanolamine	1.0
Paraffin	0.5
Stearic acid	2.0

Hi-Sil	Mins. Cure at 320°F.	300% Mod.	Tens.	Elong.	Shore A Hard.	Tear lbs./in.
101	4	1680	2630	450	82	590
	8	1630	2510	450	83	520
	12	1570	2370	430	84	530
	16	1440	2340	450	84	480
202	4	1400	3030	540	88	690
	8	1410	2870	520	89	650
	12	1330	2750	520	92	650
	16	1290	2780	530	92	590
233	4	1230	3230	600	85	720
	8	1380	3200	560	88	750
	12	1340	3180	580	88	700
	16	1320	3060	560	89	700
		Oven Aged 96 hrs. at 100°C.				
101	4	2440	2750	360	92	—
	8	2330	2530	340	93	—
	12	2270	2500	350	93	—
	16	2180	2440	350	94	—
202	4	2460	3060	400	95	—
	8	2550	2880	360	97	—
	12	—	2130	260	98	—
	16	2420	2510	320	99	—
233	4	2510	3010	380	93	—
	8	—	2830	290	95	—
	12	—	2600	270	97	—
	16	—	2510	250	98	—

	Hi-Sil 101	Hi-Sil 202	Hi-Sil 233
Abrasion Resistance, National Bureau of Standards Abrader (% of Control B)			
Cure, Minutes at 320°F.	8	8	8
Unaged Sample	49.4	56.8	55.7
Aged: 24 Hours at 212°F.	53.6	62.1	66.6
Flexing Resistance, Ross Flexer (Length of Break in .01 Inches)			
Cure, Minutes at 320°F.	8	8	8
Unaged Sample after:			
20,000 Flexes	.34	.47	.40
50,000 Flexes	.68	.90	.50
100,000 Flexes	Comp.	Comp.	.61
Aged Samples, 24 Hours at 212°F.:			
20,000 Flexes	.44	.47	.31
50,000 Flexes	.88	.86	.42
100,000 Flexes	Comp.	Comp.	.58
Durometer Hardness, Flex Samples:			
Type A, Unaged	88	92	92
Aged	91	96	95
Type C, Unaged	57	63	63
Aged	61	68	68

TABLE IX—COMPARISON OF THE HI-SILS IN A HIGHLY-LOADED LTP STOCK WITH HIGH STYRENE RESIN

GR-S 1502	90.00
No. 1 smoked sheets	10.00
High styrene resin	35.00
Hi-Sil	80.00
Zinc oxide	5.00
MBTS	1.00
DOTG	2.00
Sulfur	3.50
Triethanolamine	1.75
100°C. m.p. coumarone	7.50

Hi-Sil	Mins. Cure at 320°F.	300% Mod.	Tens.	Elong.	Hard. 0″	Hard. 30″	Tear lbs./in.
101	4	1790	2460	430	96	92	340
	8	1930	2330	370	96	95	360
	12	1980	2190	350	96	94	380
	16	1970	2140	340	97	95	360
202	4	1610	2320	430	96	95	330
	8	1710	2310	420	96	95	350
	12	1820	2220	370	97	95	380
	16	1830	2190	370	96	95	380
233	4	1250	2780	590	96	93	320
	8	1490	2680	500	93	92	350
	12	1600	2700	480	94	93	370
	16	1650	2680	460	95	94	380
		Oven Aged 96 Hrs. at 100°C.					
101	8	—	2420	260	95	93	—
	12	—	2420	250	96	94	—
	16	—	2280	230	95	95	—
202	8	—	2410	280	97	97	—
	12	—	2450	270	95	96	—
	16	—	2500	280	95	95	—
233	8	2760	2760	300	95	94	—
	12	2750	2780	310	95	95	—
	16	—	2770	300	95	95	—

	Hi-Sil 101	Hi-Sil 202	Hi-Sil 233
Abrasion Resistance, National Bureau of Standards Abrader (% of Control B)			
Cure, Minutes at 320°F.	12	12	12
Unaged Sample	45.7	52.1	61.2
Aged 24 Hours at 212°F.	48.4	52.1	62.2
Flexing Resistance, Ross Flexer (Length of Break in .01 Inches)			
Cure, Minutes at 320°F.	12	12	12
Unaged Sample after:			
5,000 Flexes	.32	.31	.40
10,000 Flexes	.50	.43	.58
30,000 Flexes	.81	.78	.92
Aged Samples, 24 Hours at 212°F.:			
5,000 Flexes	.43	.43	.46
10,000 Flexes	.62	.56	.68
30,000 Flexes	.88	.87	Comp.
Durometer Hardness, Flex Samples:			
Type A, Unaged	100	100	98
Aged	100	100	100
Type C, Unaged	80	82	78
Aged	82	85	83

Natural Rubber Soles: The three Hi-Sils have been compared in a highly loaded natural rubber recipe which contains no high styrene resin (Table VIII).

The Hi-Sil 233 compound, in addition to being much the cheapest, has better physical properties than either of the other two. Its tensile strength and tear resistance are definitely best of the three. Shore A hardness of tensile sheets containing 233 is slightly lower than that of the 202 compound but when hardness was measured on flex buttons it was the same, on both A and C scales, for the two pigments. The abrasion resistance of 233 and 202 was about the same before aging and in favor of 233 after aging. Both were considerably better than 101. Flex resistance of 233, before and after aging, was best of the three.

GR-S Soles: The three Hi-Sils have also been compared in a typical highly loaded LTP soling recipe containing high styrene resin (Table IX).

The much cheaper Hi-Sil 233 compound excelled the other two in all respects except flexing. Although it had good flex resistance, it was not as good as 101 or 202. This can be accounted for by the fact that the abrasion resistance of the 233 compound was 34 per cent better than that of 101 and 17 per cent better than 202. In compounds that differ this much in degree of reinforcement, it is to be expected that the pigment imparting the least reinforcement will last longest in a flex test.

Replacement of Silicate Pigments with Hi-Sil 233 Plus Clay

It was mentioned above that the combination of higher quality and lower cost achieved in the new Hi-Sil 233 makes it practical to replace the silicate pigments in medium quality soling with combinations of Hi-Sil 233 and hard clay.

In both the medium and good quality soling fields, where the lower priced calcium silicate and hydrated sodium silico aluminate pigments are presently used, it has been demonstrated that Hi-Sil 233-clay mixtures will give better quality at equal cost or equal quality at slightly lower cost.

The previously used loading pigments and those now needed for the various grades of soling are shown below:

Type Soling Compound	*Pigment Previously Used*	*Pigment Now Needed*
Low Quality	Clay	Clay
Medium Quality	Clay plus Silicate Pigment	Hi-Sil 233 plus Clay
Good Quality	Silicate Pigment	Hi-Sil 233 plus Clay
Premium Quality	Hi-Sil 101	Hi-Sil 233

Compounders can now produce the full range of soling qualities at lower cost by warehousing only two pigments, Hi-Sil 233 and hard clay, instead of the three that have been required up to the present. This brings about a definite reduction in factory costs.

There are, in addition, some intangible savings to be made. Hi-Sil 233 mixes readily and disperses better than the silicate pigments. This reduces costs stemming from remilling operations or rejection of finished goods. Also, uncured scrap from compounds based on Hi-Sil 233 can be reworked in subsequent batches without the undue softening noted where the hydrated sodium silico aluminate pigments have been tried.

It was not possible to replace the silicate pigments in medium and good grade soles with Hi-Sil 101-clay because 101 has higher cost and gives less reinforcement than 233. Nor did Hi-Sil 202-clay give a satisfactory combination because 202 is higher priced than 233.

The break-even point, at which the pound-volume cost of the Hi-Sil 233-hard clay mixture equals the pound-volume cost of the silicate pigment to be replaced, is easily calculated, as follows:

Since

$$\text{Total Cost of Silicate Pigment} = \text{Total Cost of Hi-Sil 233} + \text{Total Cost of Hard Clay} \quad (1)$$

or

$$(\text{Lbs. of Silicate Pigment})(\text{Cost/Lb. of Silicate Pigment}) = (\text{Lbs. of Hi-Sil 233})(\text{Cost/Lb. of Hi-Sil 233}) + (\text{Lbs. of Clay})(\text{Cost/Lb. of Clay}) \quad (2)$$

and since

$$\frac{\text{Weight of Pigment}}{\text{Volume of Pigment}} = \text{Sp. Gr. of Pigment} \quad (3)$$

or

$$\text{Weight of Pigment} = (\text{Volume of Pigment})(\text{Sp. Gr. of Pigment}) \quad (4)$$

Substituting (4) in (2)

$$(\text{Volume of Silicate Pigment})(\text{Sp. Gr. of Silicate Pigment})(\text{Cost/Lb. of Silicate Pigment}) = (\text{Volume of Hi-Sil 233})(\text{Sp. Gr. of Hi-Sil 233})(\text{Cost/Lb. of Hi-Sil 233}) + (\text{Volume of Clay})(\text{Sp. Gr. of Clay})(\text{Cost/Lb. of Clay}) \quad (5)$$

and since

$$\text{Volume of Hi-Sil 233} = (\text{Volume of Silicate Pigment})(\text{Fraction of Total Volume of Silicate Pigment}) = (\text{Volume of Silicate Pigment})(x) \quad (6)$$

and

$$\text{Volume of Clay} = (\text{Volume of Silicate Pigment})(\text{Fraction of Total Volume of Silicate Pigment}) = (\text{Volume of Silicate Pigment})(1-x) \quad (7)$$

Substituting (6) and (7) in (5)

$$(\text{Volume of Silicate Pigment})(\text{Sp. Gr. of Silicate Pigment})(\text{Cost/Lb. of Silicate Pigment}) = (\text{Volume of Silicate Pigment})(x)(\text{Sp. Gr. of Hi-Sil 233})(\text{Cost/Lb. of Hi-Sil 233}) + (\text{Volume of Silicate Pigment})(1-x)(\text{Sp. Gr. of Clay})(\text{Cost/Lb. of Clay}) \quad (8)$$

Dividing by (Volume of Silicate Pigment)

$$(\text{Sp. Gr. of Silicate Pigment})(\text{Cost/Lb. of Silicate Pigment}) = x\,(\text{Sp. Gr. of Hi-Sil 233})(\text{Cost/Lb. of Hi-Sil 233}) + (1-x)(\text{Sp. Gr. of Clay})(\text{Cost/Lb. of Clay}) \quad (9)$$

Using equation (9), and the delivered price of each pigment, the compounder can calculate the fraction by volume of the present silicate pigment loading to be replaced by Hi-Sil 233 and by hard clay. Since freight rates differ to each locality, the FOB prices for each pigment were used. Using a price of six cents per pound and a specific gravity of 2.1 for the silicate pigments, a price of nine cents per pound and gravity of 1.95 for Hi-Sil 233 and a price of 0.7 cents per pound and gravity of 2.6 for hard clay, solving for x in equation 9 shows 68.53% of the total volume loading replaced with Hi-Sil 233 and 31.47% replaced by hard clay as being the break-even point. Using this replacement, a compound of equal volume cost and equal total volume to the silicate loaded compound will result.

For comparison purposes, three typical soling compounds were loaded with hydrated sodium silico aluminate pigment and compared with a Hi-Sil 233-hard clay mixture at the break-even point, that is, at the point of equal volume loading and equal loading pigment cost. The compounds used and the obtained data which would be of particular interest to soling compounders are shown in Table X.

In the soling formulations evaluated, the Hi-Sil 233-hard clay combination imparts a slightly lower modulus, much higher tensile, equal or very slightly lower hardness, better tear resistance, equal or better abrasion resistance and much better flex cracking resistance than the sodium silico aluminate pigment on an equal volume loading and equal cost of loading pigment basis. The improvement in flex-cracking resistance with the Hi-Sil 233-hard clay mixture at the same volume loading and approximately the same hardness when compared to the sodium silico aluminate pigment is especially significant.

The data presented in Table X does not reveal the full extent of this superiority. In Compound 1, the sodium silico aluminate stock failed completely in less than 10,000 flexes while the Hi-Sil 233-clay compound did not fail until over 40,000 flexes; on the aged stocks, the sodium silico aluminate pigment failed in less than 5,000 flexes and the Hi-Sil 233-clay mixture did not fail until over 40,000 flexes. In Compound 2, the aged sodium silico aluminate containing stock had failed completely in less than 20,000 flexes, while the aged Hi-Sil 233-clay stock had not failed completely after 100,000 flexes. With Compound 3, the unaged sodium silico aluminate stock failed in less than 30,000 flexes and the Hi-Sil 233-clay stock ran for well over 100,000 flexes; the aged sodium silico aluminate compound failed at

TABLE X—COMPARISON OF HI-SIL 233-CLAY AND A SILICATE PIGMENT IN THREE TYPICAL SOLING COMPOUNDS

	Compound 1	Compound 2	Compound 3
GR-S 1502	90.00	31.25	—
Natural Rubber (No. 1 RSS)	10.00	68.75	100.00
High Styrene Resin	35.00	25.00	—
Zinc Oxide	5.00	6.25	5.00
Sulfur	3.50	3.75	3.00
Stearic Acid	—	3.75	2.00
Agerite HP	—	1.25	—
Flectol H	—	—	0.50
Paraffin Wax	—	—	0.50
100°C. MP Coumarone Resin	7.50	3.75	—
MBTS	1.00	0.25	1.00
DOTG	2.00	1.50	1.00
Triethanolamine	As Shown	As Shown	As Shown
Sodium Silico Aluminate	As Shown	As Shown	As Shown
Hi-Sil 233	As Shown	As Shown	As Shown
Hard Clay	As Shown	As Shown	As Shown

	Compound 1		Compound 2		Compound 3	
Triethanolamine	0.50	1.36	0.63	1.91	—	—
Sodium Silico Aluminate	86.15	—	80.75	—	86.15	—
Hi-Sil 233	—	54.77	—	51.43	—	54.77
Hard Clay	—	33.58	—	31.54	—	33.58
Opt. Cure at 320°F.	12	12	12	12	8	12
100% Modulus (psi)						
Original	1240	1010	940	725	580	370
Aged-*	1820	1500	1500	1275	1260	870
Tensile (psi)						
Original	2170	2570	2000	2670	2380	3260
Aged *	2210	2520	1710	2130	1920	2020
Elongation (%)						
Original	340	425	330	450	400	530
Aged *	210	305	150	290	160	300
Durometer C Hardness						
Original	77	77	68	65	53	51
Aged †	80	81	70	67	55	56
Tear (ppi)						
Original	350	370	280	350	430	610
NBS Abrasion Index (% Std. B)						
Original	35.0	35.1	45.5	45.9	38.5	45.1
Ross Flex (Flexes to ½" on 12 iron)						
Original	1,500	11,000	8,700	18,800	11,400	62,500
Aged †	360	9,700	170	21,900	8,600	50,500

* Aged 96 hours in air circulating oven at 212°F. † Aged 24 hours in air circulating oven at 212°F.

less than 20,000 flexes and the Hi-Sil 233-clay compound exceeded 100,000 flexes.

As mentioned previously, it may be necessary to adjust the accelerator or activator concentration upward when changing from a silicate loading to a Hi-Sil 233-clay loading because the smaller particle size which results in greater reinforcement also imparts a slower rate of cure to the Hi-Sil 233. Comparisons were also made using much higher and much lower loadings than those shown here. The results obtained indicated the superiority of the Hi-Sil 233-hard clay mixture over the whole practical loading range. While Windsor Clay was used in obtaining the data shown, investigations were made using other brands of hard clay and it was found that most brands of good commercial hard clay were satisfactory.

Because of the multiplicity of possible loading combinations in the medium grade soling field, where clay-silicate loading is now commonly used, no data on the use of the suggested Hi-Sil 233-clay combination are given here. However, systematic studies have been made at various total pigment loading levels of the incremental replacement of the silicate or sodium silico aluminate pigment in medium grade soling formulations by an equal volume and equal cost of the Hi-Sil 233-hard clay mixture, as was done in the better grade soling compounds discussed above.

These studies indicated that improvement in properties is nearly proportional to the volume per cent of Hi-Sil 233 in the total volume loading. This was the case over the range of practical loading levels evaluated. Therefore, it is suggested that the silicate pigment in specific medium grade soling formulations be replaced by a Hi-Sil 233-hard clay mixture of equal volume and equal cost, as was demonstrated above. Because of the greater reinforcing properties of Hi-Sil 233, smaller amounts of this pigment will be as effective as the less reinforcing silicate pigments. Although only small amounts of Hi-Sil 233 may be called for in this type of soling, it is suggested that the rate of cure be checked and adjusted if necessary to that of the silicate containing formulation.

No suggestions are made regarding the low grade soling compounds where clay is now used as the loading pigment. The higher price of Hi-Sil 233 precludes its use in this type of soling except, possibly, as a processing aid in some unusual circumstances.

In obtaining this soling data, all of the compounds were mixed in a laboratory "B" Banbury using a rotor speed of 77 r.p.m. and a 12 minute mixing cycle. Where present in the formulation, the high styrene resin was premixed in a warm Banbury to insure fluxing of the resin. Because a wide range of loadings of a variety of pigments were evaluated, this insured fluxing in those cases where very light loadings, which did not generate sufficient heat in the Banbury for fluxing, were used. After removal from the Banbury, the stock was immediately transferred to an open 6 x 12 inch mill, where the sulfur and activator, usually triethanolamine, were added and mixing was completed. The activator was added on the mill only for accuracy; commercially, it is generally added in the Banbury. In all cases at least two evaluations were made at different times using pigments from at least two sources, lots or shipments. All testing was done according to the appropriate ASTM procedure.

LITERATURE REFERENCES

(1) Allen, E. M., Gage, F. W., and Wolf, Ralph F., "Compounding of Natural Rubber with a New Fine Particle Silica," *Rubber Age*, p. 297, June, 1949.

(2) Columbia-Southern Chemical Corp., "Hi-Sil C," Pigment Data Bulletin No. 53-2, March, 1953.

(3) Wolf, Ralph F., "The Compounding of Colored Butyl Rubber Goods," *Rubber Age*, p. 389, June, 1954.

In our next issue . . .

"Rubber Hardness Testing" by J. R. Scott, Research Association of British Rubber Manufacturers—Factors influencing measurement—Discussion of methods—Proposed international standard.

"The Effect of Some Variables on the Tensile Strength Testing of Spray-Formed and Cast Vinyl Films" by L. Berger, I. Weber, and A. Gallaccio, Frankford Arsenal—Effect of different operators—day of preparation—aging time—formula changes.

"Compounding Studies of Kel-F Elastomer" by C. B. Griffis and J. C. Montermoso, Quartermaster Research and Development Command—Results of oxide, oxide-amine, polysulfide, polyamine, diisocyanate and other cures.

Questions and Answers on Rubber and Plastic Foams

THE joint meeting of the Akron Rubber Group and the Cleveland-Akron Section of the Society of Plastics Engineers which was held in Akron, Ohio, on October 22, 1954, was devoted to a Symposium on Rubber and Plastic Foams. Panel members included T. H. Rogers (Goodyear), William E. Manring (Goodrich Chemical), W. H. Ayscue (DuPont), William Schock (Dow Chemical) and Robert Courtney (Bakelite). The talks given by these panel members were reproduced in our last issue. The questions and answers which were an important portion of the symposium follow herewith.

Question—Why hasn't the quantity of synthetic rubber latices used in foam rubber approached that used in dry rubber applications?

Answered by Mr. Rogers: Relatively speaking, the quantity isn't very small. I think that synthetic rubber will account for about 35 to 40%, which is no small proportion of the amount of latex used in foam. One of the reasons why it has not gone still further along is because whereas dry unvulcanized synthetic rubber of the GR-S type has low stress-strain properties, of the order of about 300 pounds per square inch and 200% elongation—I'm talking now about the hot rubbers which until relatively recently we were used to—when reinforced with carbon black, these values are enormously increased. On the other hand, carbon black added to latex has no reinforcing effect on the vulcanizate. In fact, it acts as a diluent because synthetic latex has no crutch, such as carbon black, on which to lean. The latex chemists have not been able to adapt it as did the dry rubber compounders to tires, tubes, etc. The cold latices, with inherently higher physical properties associated with the vulcanizate, have been a major step in the right direction. Latex foam consisting of 100% synthetic made with these cold latices is now being produced.

Question—What are the characteristics required for synthetic rubber latex to be used for foam?

Answered by Mr. Rogers: For latex foam rubber use a synthetic latex must have high solids, relatively low viscosity, and the vulcanizate must have good stress-strain properties. The cold synthetic latices have advanced in this direction. However, the cold synthetics now being used in latex foam have too high a percentage of non-rubber materials contained in them. A foam producer does not want to buy 11 to 12 pounds of salts, soaps, surface-active materials, and so forth, for every 100 pounds of rubber he buys. This is one of the factors that enter into the "weight penalty" so commonly complained about by foam producers, where synthetic latex could be improved. In fact, it's the No. 1 place where it should be improved and they have advanced in this direction. Some of the recent cold synthetic latices have been made with less non-rubber materials in them, such as a surface active material, and they are an improvement over what was available when the cold latices first were given to the foam producers.

Also, of course, in the synthetics we would like to have better stress-strain properties, tensile, and elongation and, in fact, they are still inferior to the natural rubber latex in that respect. They are better in aging and especially in the long term aging tests. I think that about takes care of what we want in synthetic latices.

Question—What foaming agents are being used for the chemically blown polyvinyl chlorides?

Answered by Mr. Manring: The most common blowing agents for polyvinyl chloride sponge and/or foam are Unicel ND (dinitroso-pentamethylene-tetramine), Celogen OT [p,p′ oxy bis (benzene sulfonyl hydrazide)], BL-353 and BL-425 (composition not disclosed), and Porophor N (azoisobutyric dinitrile), this latter largely discontinued in this country because of the toxic residue.

Question—What problems are presented in adhering or combining various foams in industrial applications?

Answered by Mr. Schock: There are certain problems presented in adhering foamed polystyrene. We find it necessary because of Styrofoam's resistance to the passage of water vapor to avoid the use of a water-soluble adhesive except in a spot application. Then, too, adhesives which may have a solvent attack on polystyrene are to be avoided. In industrial applications, such as low temperature rooms, Portland cement mortar which chemically sets is an excellent adhesive. Also, we find that the epoxy type resins provide good adhesion to metal, wood and other substances.

Answered by Mr. Ayscue: Normally, adhesion of isocyanate foams is no problem to any type of clean surface. As a matter of fact, trying to prevent adhesion is the biggest problem encountered in making many isocyanate foam products, particularly where molding is concerned. Isocyanate foams will stick to Hypalon, aluminum, steel, wood, concrete, cotton, wool, Dacron, nylon, and a host of other materials.

Answered by Mr. Courtney: I think we can very readily deceive ourselves whether we do or do not have good adhesion in the rigid types of foam, particularly where they are used in structural applications. If you take a sandwich structure and load it in flexure, tremendous sheer stresses are set up right next to the skin. I am talking about a reinforced plastic skin and the failure will ordinarily occur there but practically anything that will adhere to the skin member will adhere to the foam. It will mechanically key in if it doesn't have any specific adhesion and the failure will ordinarily occur in the foam right next to the interface rather than failure at the interface itself. So the ideal thing to do if you could in that type of structure would be to reinforce your foam gradually from center to skin. In other words, the center where the neutral axis is could have no reinforcement in it at all and a maximum reinforcement right next to the skin. And if you build up a Syntactic foam, you can put in fibers and you can distribute them non-uniformly so that you have the greatest concentration of reinforcement at the skin where you need it and the least at the neutral axis, and adhesion then, or what is often mistaken for lack of adhesion, will cease to be a problem.

Question—Are there any reasons other than cost why prevulcanized latex cannot be employed in the manufacture of latex foam rubber?

Answered by Mr. Rogers: Actually, some degree of prevulcanization is given the latex in the two major processes (Dunlop and Tallalay) that are used to make latex foam. The reason why you cannot go to complete vulcanization is that the particles lose their cohesive force and, rather than grabbing on one to the other when they gel around these bubbles, they tend to break apart. This results in a very weak structure that ends up in a poor lower compression per unit density foam. It also decreases the stress-strain properties of the foam. So we have found, that is the industry has found, that a slight degree of vulcanization does help out but beyond a certain point you can not go.

Question—Are any economies to be gained in the use of extender pigments, such as the calcium carbonates or clay, in polyvinyl or isocyanate foams?

Answered by Mr. Manring: Well, largely speaking, our work with fillers and extender pigments has been pretty much restricted to the chemically blown, atmospherically expanded P.V.C. As a general rule, the carbonates and the clays have had no marked effect on the quality of the foam up to about 20 parts per 100 of resin other than the fact that there has been a tendency to coarsen the cell structure somewhat. Beyond 20 parts a substantial expansion becomes more and more difficult. As a very specific remark, in our experience, wood flour as a filler seems to promote extremely fine cell size.

Answered by Mr. Ayscue: The initial experiments with fillers in isocyanate foams seem to indicate that there is no real economy in using them because they produce a high density foam. This statement should be taken with a grain of salt because this is a new field of endeavor. Future developments may well uncover ways of effecting economies by use of fillers.

Question—With regard to soft foams, how do the compression modulus curves at various deflections compare for rubber latex, polyvinyl chloride, and isocyanate foams?

Answered by Mr. Rogers: In my experience, the compression deflection curves of vinyl and latex are very similar. They go up proportionately as the density is increased. The latex samples that we have measured have been a little better than the vinyl in that we have been able to get higher compressions at lower density. Of course, the vinyls can be changed by changing the plasticizer. The polyester-isocyanate foams are sort of "sports." They have a different type of compression curve. They go up on a straight line and then they flatten off. They reach a plateau and then they go up again. Some people think that this is an advantage for cushioning and there are others who think that it's a distinct disadvantage. I think that the story will perhaps be told better when we get cushions into production and get them around for people to assay their value in actual use.

Question—Describe briefly the process of extruding expanded polyethylene for wire insulation.

Answered by Mr. Courtney: In short, the process is one of dissolving a foaming agent, which is ordinarily an organic nitrogen compound, in the polyethylene and then introducing the entire mix into an extruder of the type that is used for extruding insulation over wire, raising the temperature of the mix in the extruder until it decomposes the foaming agent but holds it under sufficient pressure to repress the expansion of the released gas until the mass emerges through the nozzle around the wire into the reduced pressure of the atmosphere, at which point it blows its bubbles and you have a foam-surrounded strand of wire.

Question—How do the plastic foams compare with regard to allergies in respect to rubber latex foam?

Answered by Mr. Ayscue: We have made a number of tests in the Industrial Toxicological Laboratory on the allergic effects of isocyanate foams and, to date, no conclusive evidence has pointed toward the products being toxic in any form. The use of these foams has not been widespread enough in this country to confirm this conclusion.

Answered by Mr. Manring: I am not familiar with any actual patch tests on foam. As a general remark, however, I would like to point out that the components which go into polyvinyl chloride foam are materials that, if not explicitly approved for contact, at least are in many cases approved for food packaging applications. To the extent that you can accept that as a favorable indication, I think it has some meaning.

Question—What methods are there for measuring the resiliency of foam?

Answered by Mr. Rogers: Well, the A.S.T.M. and the R.M.A. have no established procedure or standard to my knowledge of measuring the resiliency of foam. In fact, until very recently and until these new foams—polyester-isocyanate foams and the vinyl foams—came in, that was something that wasn't discussed too much. The falling ball method that we have worked out in the laboratory (Mr. Van Orman worked it out at Goodyear Research) seems to be about as good a method as any for checking resiliency. The foams we tested were one-inch slab stocks and they were all the same compression. They differed in density, however. Latex foam which consisted of 100% natural rubber was quite high, about 500% over the vinyl or the polyester-isocyanate foam. Whether that's good or bad, I don't know.

Question—To what products do each of the various rubber and plastic foams best lend themselves?

Answered by Mr. Rogers: Latex foam is already an established material. It has been successful in all of the cushioning applications that it has been put into. It has good compression-density ratio; pretty good stress-strain properties; good odor; excellent recovery to permanent set, which is a good property for any cushioning material; excellent flex life, and good low temperature properties. The bactericidal and fungicidal properties are pretty well known and they are excellent.

Its disadvantages are apparent when used under direct light. It doesn't hold up too well. However, most cushioning materials are covered; mattresses have been out for several years and they are still giving good performance. We think we have improved on our compounding and our processing since that time. Latex

foam supports combustion. Inflammability may make this disadvantageous for use in military airplane seating and places like that, but we think that for all around use it fits in very nicely.

Answered by Mr. Manring: As far as vinyl is concerned, I think I can summarize very briefly. We are talking about a contender which is in the development stage, one on which there are many problems still to be solved, but a product about which the greatest degree of optimism, I think, is justified. Running down the characteristic good properties and some of those that aren't so good, as matters now stand, I still believe that the non-flammability which can be compounded into vinyls is a most important consideration. It may not be at present but certainly the trend of everyone's thinking is towards greater protection and greater safety against flammable materials. Articles that I've seen not too long ago in the *World-Telegram* and the *New York Daily News* point to an instance where fire broke out on a public conveyance and, at least to me, that highlights a property that vinyl could very nicely bring to bear on a situation that is many times critical.

Vinyls are well known for their resistance to oils, chemicals, oxygen, and for their outdoor resistance. They've got a long history that dates back fifteen years, at least, where they have performed under the most stringent kind of circumstances and held up very well. Those properties will be very important in foam as time goes on.

The resilience qualities of vinyl are important in some cases; for instance, in crash pads. Perhaps resilience isn't the right thing to say; perhaps non-resilience is a better way of putting it. We believe from the evidence that we have at this point that there is a potential advantage in vinyl foam in the fact that you can compound for different compression resistance characteristics at a wide range of densities. In other words, taking a case that's economically important at low density, you can form anything from a very soft to quite a firm foam.

Compression set is a property on which vinyl falls short at the present time, if you accept the demands of the present A.S.T.M. test. That test specifies 158°F. I know of one case where vinyl foam had passed that test. The maximum specified is 20% set, as I recall, and vinyl has passed that quite adequately. That is an isolated case, however, and I would only indicate that it is my conviction that as time goes on, compression set at 158°F., either within the limits of present vinyl compounding or by the marriage of vinyl with some other heat-resistant material, will be solved.

It is true that vinyl has limited high temperature service qualities. Again, however, vinyl has performed well in continuous services at 105°C. I don't think that foam will be capable of doing that within the near future, but it seems to me that experience would indicate that it is a possibility.

By and large, I should say that the future of vinyl foam rests on good performance qualities that have been proved in the past as being typical of resins in a wide variety of services under the most stringent kind of conditions.

Answered by Mr. Ayscue: The tensile strength of isocyanate foam is relatively high per unit of weight. For example, it's easy to make a foam with a density of four pounds per cubic foot that will have a tensile strength in the range of 40 psi or 10 pounds of density. Isocyanate foams also have some degree of flame resistance, as was mentioned in the discussion on PVC foams. They have an entirely different compression-deflection curve, showing a plateau effect which is not found in other foam materials. Whether this will prove an asset or a liability remains to be seen.

A wide variety of products can be made with the isocyanate foams. For example, slabs have been made ranging from a two-pound density flexible foam to a 20-pound density rigid foam, both essentially through the same reaction. The flexible foam is light, has good strength and good recovery. The heavier density product might be used for reinforcing metal or fiber glass panels in construction work, perhaps truck bodies, possibly some type of home construction, office buildings, etc. A very rigid product is obtained with a fairly high density foam sandwiched between 10 gauge metal. Even the lower density foams down to two pounds have tremendous strength per unit of weight.

The semi-rigid foams have been tested experimentally for thermal insulation of process equipment. They look good, particularly on complicated fittings and valves, where it is expensive to cut and fit conventional insulation. The thermal insulation properties or the "K" factor of rigid foam is in the neighborhood of .25 to .40. There are a number of companies testing rigid isocyanate foams for insulating products which operate at low temperatures, such as refrigerators. It is being considered for two reasons, not only for its insulating value but also for its reinforcing effects in the structure. Some of the many uses being considered for elastic foams are household and industrial sponges, because of their excellent oil and abrasion resistance, carpet pads, shoulder pads, cleaning brushes, and even tooth brushes.

Question—What is the economic situation with regard to the various types of foams?

Answered by Mr. Manring: The raw material picture on the vinyls is well known. The materials are in ample supply. In general, I think that simply picking 100 parts of resin and 100 parts of plasticizer as a typical point to start discussing from, we are talking about resin at 41c and plasticizer which has deteriorated to a point where it is now 30c a pound (that's good primary plasticizer, too), which means that basically we are talking about a raw material cost of about 35c a pound, give or take a couple of cents. Also, the point should be made that this neglects any possibility of taking advantage of other raw materials in the plasticizer field which are much less expensive and which, as time goes on, may well be adapted to foam construction. That 35c cost, in other words, is a top cost and realistic as far as raw materials are concerned.

As far as capital equipment goes, all the estimates which have been made point to the fact that foam vinyl can be made with a comparatively modest investment. Broadly speaking, something around $50,000 to $60,000 might buy a plant capable of making 2500 pounds a day of foam. Increasing that output perhaps 50 times might, speaking broadly again, increase the capital investment only ten-fold. I make the point that per volume output, capital expenditure will be low.

Processing involves a comparatively short cycle and for that reason can be looked on as a relatively favorable factor. We believe that the waste in making foam vinyl is going to be very modest. The wet waste can certainly be reused from all indications and that, to me, is a very substantial plus value.

Answered by Mr. Schock: During my discussion I mentioned the prices at which polystyrene foams are now being sold. Materials which are sold by the pound are the logs and rough planks I described and I will repeat they are sold now, already foamed, for 55c per pound. The board form is, as I said, sold on the board foot basis. Converting that to pounds, they cost about 69c per pound for finished boards. I see nothing in our future that would indicate any increase in those prices; rather, a decrease seems more or less indicated in the foreseeable future.

Answered by Mr. Rogers: As a latex foam producer, I should say that the cost of getting into business on latex foam is pretty high and therefore it keeps a lot of people out of it and discourages others from going into it. Actually, however, you have to foam the rubber, gel it, cure it, heat it, wash it, and dry it. Outside of the washing operation, I believe that all the other operations are pretty much in line with what you do with vinyl.

I believe that when we discuss the cost of foam we are actually talking about buying compression rather than buying weight and if you can take advantage of low density to get your high compression you are, of course, ahead financially. We think that with natural latex at 40c a pound, we are in a very good position competitively, and of course synthetic latices, especially the cold latices at a reasonable level, have been a big factor in keeping the price of natural rubber latex down. If the need arose, we could go over into all-synthetic in quite a few foam applications.

Answered by Mr. Courtney: Basically, the phenolic materials from which the phenolic foams are made are probably the cheapest of the plastic materials on the market today because, for one reason, they have been produced the longest and they have had the greatest opportunity to reduce their costs. The cost of converting them into foam, however, varies greatly, depending upon the type of foam being made, its density and various other details of its use. The company I am with, of course, sells only the resins from which the foams are made and I don't feel that I am in a good position, either from the point of view of knowledge or ethics, to discuss the costs that our customers have for converting our product into finished products for resale. Certainly not in public. The resins themselves are on the market at prices between 30c and 40c a pound.

Answered by Mr. Ayscue: Any discussion of the economic picture that effects isocyanate foams is pure speculation, because we are dealing with raw materials that are currently produced in limited volume, in either semi-commercial or pilot plant scale. Many of the finished products being market tested today are also produced in semi-production equipment, so it is difficult to get a clear cost picture at this time. The price of the raw materials today that go into elastic foams is something like this: toluene di-isocyanate sells at about $1.40 per pound. Polyesters sell over a wide range of prices, although I think a price of about 60c per pound could be considered average. This means that elastic isocyanate foams could be made today with a raw material cost of about 80c per pound. These foams have a load-carrying capacity about double that of rubber foam, at least in the low end of the load deflection curve. Plastic foams, as made today, contain a higher percentage of isocyanate than elastic foams. Therefore, their raw materials cost is higher—in the range of $1 to $1.15 per pound.

It is speculated that these prices will be reduced substantially. Within the course of 2 to 3 years it is possible that the raw material costs for producing elastic foam will be in the range of 50 to 60c per pound and for producing rigid and semi-rigid foams in the neighborhood of 80c per pound.

Question—How large are the Microballoons on the average? What is the size of these Microballoons?

Answered by Mr. Courtney: The diameter of the Microballoons ranges between about 10 to 100 microns. We do not have an accurate analysis of the size because we have so far been completely unsuccessful in fractionating them. However, the smallest we have measured has been about 10 and the largest about 100 microns.

Question—What about the sound attenuation characteristics of the various foam materials?

Answered by Mr. Schock: As far as polyvinyl chloride foams are concerned, they have little or no sound deadening properties. The sound absorbing ability is about equal to that of a plaster wall. This is rather a complex subject, since the sound absorption coefficient varies considerably with the frequencies. An extensive report on this subject appeared in the April, 1953, issue of *Product Engineering.*

Answered by Mr. Ayscue: Some work has been done on the sound absorption of isocyanate foams at various frequencies. The results of tests made to date show that these foams have good sound absorption properties at certain frequencies.

Question—What are the relative economics of using a phenolic foam as compared with a polyester foam?

Answered by Mr. Courtney: The economics favor the phenolics over the polyesters, basically because the cost of the phenolic foams is less than the polyester foams. Further, I believe we know how to foam the phenolics to lower density and the lower the density the less a cubic foot is going to cost. So far as the techniques for doing the job are concerned, I am not familiar enough with the fabrication costs of polyester foams to make a good comparison between the two types of foams.

Question—Will the isocyanates be available in commercial quantities in the foreseeable future? In other words, will quantities be large enough to warrant a drop in present prices?

Answered by Mr. Ayscue: Actually, the present pilot plants producing isocyanates are rather large. However, I suspect that substantial price cuts will not be in the offing until large scale commercial plants are built. Recent reports indicate that such plants may be in operation sometime in 1956. In the interim, there probably will be some small price reduction.

Question—Is the self-extinguishing nature of vinyl foam a natural occurrence, or does it have to be compounded into the foam?

Answered by Mr. Courtney: It must be compounded into the foam, primarily through the proper choice of plasticizers.

Editorials . . .

Synthetic Statistics

NOW that the synthetic rubber industry is completely in the hands of private industry (assuming that the sale of the GR-S facility at Baytown, Texas, to the United Carbon Co. will be approved by Congress within the next few weeks), it is time to take a good look at the statistical position. Many reports concerning this position have been making their appearance, emanating not only from within the rubber industry itself, but from research, management and financial institutions. The rubber industry, as we have stated many times before, is now "big business" and is commanding considerable attention.

The disparity between the "capacity" figures for domestic synthetic rubber production, some of which are quoted in the news pages of this issue, can be traced to two specifics: (1) Oil-extended polymers, and (2) Assigned annual capacity. It is very difficult to pin down the actual rubber hydrocarbon involved in the oil-extended polymers on an annual basis, until the final actual annual production figures are in. Actual production varies from month to month and the amount of oil utilized is equally varied. Accordingly, some figures on "total annual capacity" are based on "guesstimates." As for assigned annual capacity, such figures refer only to that portion of capacity the individual synthetic rubber plant is required to produce in the event of an emergency. Another contributing factor to the disparity is the fact that some reports when talking of synthetic rubber refer only to GR-S types while others embrace all types of synthetics.

For example, the latest report issued by Goodyear over the signature of P. W. Litchfield refers to estimated total capacity of 1,028,000 long tons of synthetic rubber. This figure covers all types of synthetics and includes the 44,000 ton annual output of the Baytown plant. The Commerce Department uses a figure of 925,000 long tons for annual capacity. This figure, too, covers all types of synthetics, but does not include the 1000,000 ton allowance made by Goodyear for oil-extended polymers. A report issued by a leading financial institution talks of "practical capacity" of 687,000 long tons for GR-S or 823,000 long tons including the special synthetic rubbers. And so it goes.

What are the facts? The total assigned annual capacity of the twelve GR-S plants purchased from the government (including Baytown) amounts to 733,600 long tons. This is a net figure and does not include any allowance for oil extension. Nor does it actually cover possible total capacity, a position which has never been reached and which must remain a nebulous figure for the time being. If we include 100,000 long tons for oil extension, 90,000 tons for Butyl rubber, 80,000 tons for neoprene (soon to be increased), and 20,000 tons for the nitrile rubbers, we come up with a grand figure of 1,023,600 long tons. This figure, which is fairly close to the Goodyear calculation, may be temporarily accepted as the total productive capacity of all types of domestic synthetic rubber plants, including an allowance for oil-extended polymers based on present demand.

What of the future? Practically every GR-S type plant will be operated at near capacity for the balance of this year. Estimates of total new rubber consumption in the United States for 1955 have again been revised upwards and it is now likely that such consumption will pass the 1,400,000 long ton mark. Some quarters are predicting consumption of 1,450,000 long tons, and we have heard one estimate of 1,500,000 tons. According to the Commerce Department, world demand for synthetic rubber will reach 1,240,000 long tons by 1959. Even allowing for production of synthetic rubber abroad, it is quite obvious that American producers will have to expand operations considerably within the next few years.

New Look

REGULAR readers will note several changes in the physical appearance of RUBBER AGE in this issue. They are the first of many changes we have planned, all designed to improve the readability and attractiveness of our journal. Our front cover has been redesigned in keeping with the modern tempo and now contains a clue to the contents of the feature articles. The contents page itself has been redesigned and now carries short abstracts of every feature article. In response to many reader requests, this page has been moved up closer to the front of the book and will appear on the ninth page of every issue. When advertising commitments are met, it will be moved up further front, to the third or fifth page. Color has also been added for emphasis. All department headings have also been redesigned for easier recognition. All of these present and planned changes in physical appearance are part of our constant efforts to bring to our readers the most modern and most effective rubber journal published. We are always susceptible to new ideas and welcome comments and suggestions from the reader at all times.

Highlights Sidelights *of the News . . .*

June, 1955

Some segments of the industry were rather taken by surprise by the price offered by the United Carbon Co. for the Baytown GR-S facility ($7,153,000) . . . It will be remembered that during earlier negotiations, General Tire had bid $2,486,448 for the plant only to have the offer rejected by the Disposal Commission . . . While it had been expected that the sales price would be considerably in excess of the earlier offer, a contract for almost three times as much had not been anticipated (page 411).

Pertinent data on commercially available GR-S type synthetic rubber polymers is the subject of a table we are pleased to publish in this issue . . . Designed as an aid to consumers, the table lists those GR-S type polymers now being commercially produced by plant purchasers, together with information relative to price, freight, etc. . . . In succeeding issues the table will be brought up-to-date to include the latest data so that consumers will be advised of what is available and from whom at all times (pages 422-23).

The Second International Rubber Quality and Packing Conference concluded its final session on May 6 amid high hopes of real accomplishment . . . Conference delegates participated in a wide variety of activities including dock trips and visits to the offices of the Rubber Trade Association of New York where actual quality arbitrations were witnessed . . . A summary report of the conference has now been made available as approved by participating delegates (page 412).

Subcommittee XIII on Synthetic Elastomers of Committee D-11 on Rubber and Rubberlike Materials, A.S.T.M., held its first meeting on May 3 in Cleveland, Ohio . . . The subcommittee defined its scope and voted to recommend to D-11 that FFC specifications as of April 15, 1955, be used until standard A.S.T.M. specifications are made (page 415).

An interesting three-way meeting—Rubber Division of the Chemical Institute of Canada, Buffalo Rubber Group, Ontario Rubber Section—was held on May 20 in Niagara Falls, Ont. . . . Our own M. E. Lerner was speaker at the joint banquet held by the Buffalo Group and Ontario Section, discussing impressions he had gained of the European rubber manufacturing industry while on a recent trip abroad (page 416).

NEWS REPORTS and Industry Activities

UNITED CARBON SIGNS $7,153,000 CONTRACT FOR PURCHASE OF BAYTOWN COPOLYMER PLANT

ON MAY 25, the Rubber Producing Facilities Disposal Commission announced that it had signed a contract with the United Carbon Co. of Charleston, West Va., for the sale of the government-owned GR-S plant at Baytown, Texas, subject to the approval of the Attorney General. The sales price of $7,153,000 represented the highest amount offered for the plant. The Disposal Commission received nine proposals to purchase the plant. On May 19, the Goodyear Synthetic Rubber Corp. withdrew its bid and on May 25, the Thiokol Chemical Corp. withdrew its bid.

The Baytown plant is the 25th of 27 facilities to be sold. One plant, an alcohol-butadiene unit at Louisville, Ky., has been leased to Publicker Industries, Inc. of Philadelphia, Penna. No bids were received on another unit, a 122,000 long ton GR-S plant at Institute West Va. Under terms of the disposal law, this plant went into standby for a period of three years. Congress has thirty days to review the sale of the Baytown plant after the Disposal Commission formally reports to Congress on the sale.

Negotiations for the sale of the Baytown plant were authorized by Public Law 19. This legislation was enacted after the Commission's original report of last January which stated that the price offered for the plant was unsatisfactory and no sale could be recommended.

General Tire & Rubber Co. of Akron, Ohio, the operator of the 44,000 long ton plant under the government's synthetic rubber program, was the sole bidder for the facility when the Baytown plant was originally put up for sale. The Disposal Commission, however, turned down the General Tire bid of $2,486,448 as too low.

Explains Goodyear Withdrawal

In explaining why Goodyear had withdrawn its bid on the Baytown facility, E. J. Thomas, president, stated that his company was concerned that the plant might be put in standby condition. Goodyear, he stated, had submitted its bid only to make sure that the operations would not be interrupted and the output available to industry. At the time of Goodyear's withdrawal (May 19), eight other companies were actively bidding for the Baytown facility. Goodyear felt that the sale of the plant was assured and so withdrew its bid for the facility.

In anticipation of Congressional approval for the sale of the Baytown plant, United Carbon has announced plans to enter into the production of types of synthetic rubber comparable to GR-S 1600, 1601 and 1602 (carbon black masterbatches), GR-S 1801 (cold oil black masterbatch), and X-763. This latter polymer is identical with GR-S 1801 except that it contains 37.5 parts of an aromatic type oil instead of 25 parts of a naphthenic type oil. In all instances, United Carbon advises, HAF blacks will be used.

Reflecting on the recent transfer of the synthetic plants from the government to private industry, the Business and Defense Services Administration of the U. S. Department of Commerce recently stated that the interests which acquired the plants have a promising, expanding market before them. BDSA stated that synthetic rubber output must be stepped up to 1,240,000 long tons a year by 1959 to keep pace with world needs for new rubber.

"With world requirements for new rubber rising at a rate conservatively estimated at 4% annually," the report said, "while the anticipated increase in natural production is approximately 1% a year, the opportunity for increasing the output of synthetic rubber is apparent."

BDSA stated that by 1959, world requirements for new rubber would be about 3,100,000 long tons, while world production of natural rubber will be about 1,860,000 long tons. This is an increase of only 3% compared to this year's expected output of natural. The difference of 1,240,000 long tons is substantially larger than current output of synthetic in the United States plus 100,000 tons of synthetic available from foreign countries outside the Iron Curtain.

The report states that the impending deficit situation is generally appreciated in rubber trading circles. It is indicated that plantings of new rubber trees are at a relatively low level. Immediate large-scale planting, the report stated, would have no effect on production before 1962.

According to the government report, the synthetic rubber producers face a twofold challenge in the coming years. The plants must step up their output of synthetic rubber to fill world needs and also undertake intensive research in the use of synthetic as a replacement for natural rubber in various products.

Near Balance Seen

The Management Committee of the International Rubber Study Group estimates that world output of natural and synthetic rubber this year will top consumption by only 45,000 long tons. The agency, meeting in London, issued the forecast in a communique to member governments. It put world output of natural rubber at 1,845,000 long tons and consumption at 1,830,000 long tons.

Synthetic production in the United States, Canada and Western Germany was estimated at 985,000 long tons, with consumption — excluding rubber produced by Iron Curtain countries—forecast at 955,000 long tons. "It was agreed," the communique added, "that substantial additional capacity for production of both natural rubber and synthetic rubber would appear available if demand warranted it."

Appoints Executive Committee

The Executive Committee of the Scrap Rubber and Plastics Institute of the National Association of Waste Material Dealers has been appointed by Sam Tanney, Tanney-Costello, Inc., Akron, Ohio, president of the Institute. The following were appointed: Jerome H. Desser, Desser Tire & Rubber Co., Los Angeles, Calif; Ben Gordon, A. Schulman, Inc., Akron, Ohio; Milton Kushkin, A. Schulman, Inc., E. St. Louis, Ill.; Irving Levin, Superior Iron & Metal Co., Jacksonvile, Fla.; A. Lowenstein, A. Lowenstein, Newark, N. J., and Henry Rose, H. Muehlstein, Inc., Akron, Ohio.

SECOND INTERNATIONAL QUALITY CONFERENCE HELD IN NEW YORK CITY

The Second International Rubber Quality and Packing Conference which began on May 3 at the Essex House in New York City, concluded on May 6. The conference was jointly sponsored by the Rubber Manufacturers Association, Inc., and the Rubber Trade Association of New York. W. James Sears, vice-president of RMA, and R. D. Young, president of RTA, served as co-chairmen of the conference.

While the actual conference sessions began on May 3, the complete program for the meeting began on April 26 with the registration of delegates. On April 27 and 28, delegates visited New York docks to observe the manner in which rubber is handled in the United States. In the afternoon on both days, delegates witnessed quality arbitrations as conducted in the offices of RTA. On April 29, delegates visited a synthetic rubber plant and tire factory. Three official receptions were held on May 3, 4 and 5.

There follows herewith a summary report of the proceedings of the conference as approved by the delegates:

Opening Statements Made

The conference opened with several of the delegates making statements, reviewing their experience with natural rubber quality and packing problems during the year 1954. In discussing type samples, the RMA and the RTA of New York referred to U.S.A. experience during 1954, with the delivery of rubber not conforming to the RMA Type Samples. Other consuming countries also related their experience with rubber deliveries not conforming to standard types.

The conference reviewed the existing type samples of all RMA and Singapore grades, and suggestions were made regarding standardization of other types of natural rubber.

The conference agreed that certain of the RMA Type Samples were acceptable to all organizations in attendance, but disagreement was evidenced in connection with certain other RMA and Singapore Type Samples. The desirability of achieving unanimity of international type samples was agreed, and a Type Sample Committee was appointed and their report, Conference Document 34, which provided recommendations to this end, was unanimously adopted by the conference.

The Joint RMA-RTA Type Sample Committee explained methods of preparing and distributing RMA Type Samples to trade and industry. The delegate from the S.C.C.R.A. pointed out that their procedures as to Singapore Type Samples were similar to those of the Joint RMA-RTA Committee.

First Conference Activities

During the First Conference at Singapore, the delegates from the U.S.A. asked the producer organizations in Singapore, Malaya and Indonesia to assist in the RMA Type Sample duplication program by forwarding rubber that could be used by the Joint RMA-RTA Type Sample Committee in the preparation of RMA Type Samples. The S.C.C.R.A. offered to cooperate by supplying sample material upon request.

The conference took note of and appreciated the efforts of the Djakarta Sampling Committee in their work of supplying local samples to estates for their guidance. In this connection, it was pointed out that in order to afford a wider distribution, RMA Type Samples might be duplicated by associations in producing countries, but that the responsibility therefor rested with the individual associations, this being in accordance with the report of the Packing and Marketing Committee of the International Rubber Study Group.

The conference reviewed and accepted the definitions of the kinds of raw material that are to be used in the preparation of the various types of rubber, as shown in the RMA Type Descriptions and Packing Specifications for Natural Rubber. Since the finished types of rubber are no better than the materials used in their preparation, the conference discussed the possibilities of improving the quality of the raw materials. The delegates from producing countries explained the efforts being undertaken, through education and supervision, to improve the basic quality of natural rubber.

The problem of the control of the ever-increasing quantities of skim rubber now being produced was considered. The conference was unanimous that steps to control production and distribution on the lines suggested by the M.R.E.R.B. and the S.C.C.R.A. should be instituted in Malaya and followed as soon as possible in the other producing countries concerned.

Joseph Louis

Chairman of the RTA Delegation to the Quality Conference

Delegates from consumer nations stressed the importance of reducing the moisture content and avoiding copper and manganese contamination.

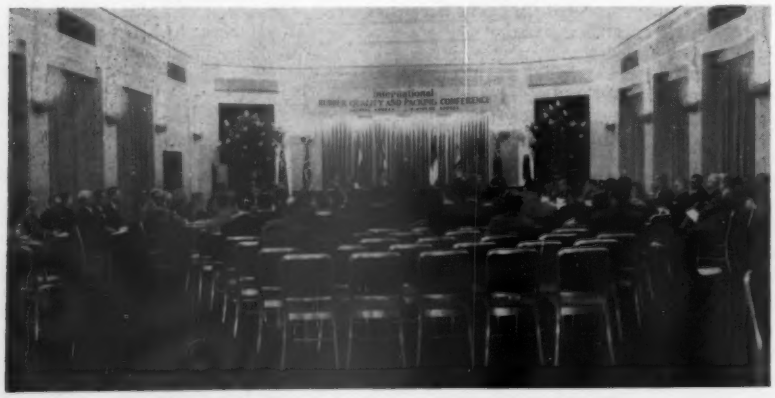
The conference agreed that every effort should be put forth by producing countries to select and grade rubber which will conform with standard type samples.

The conference took note of the progress that has been made in the production and use of Technically Classified Rubber. It was noted that certain smaller manufacturers, particularly in Europe, have indicated an interest in this material, but there was some doubt as to the desirability of extending classification of rubber to the lower grades. The delegate from the R.R.I. of Malaya, speaking on behalf of the I.R.R.D.C. of London, requested that consumers of this type of rubber furnish that organization with their reactions and experience with this type of material, in order that a determination might be made with respect to the desirability of continuing research in connection therewith.

Representatives of consuming nations explained to the conference the difficulties encountered in handling and processing faulty rubber, and the end product difficulties resulting from its use.

Packing Specifications Reviewed

The conference reviewed in detail the RMA Packing Specifications, which were generally acceptable, subject to further consideration of certain minor suggestions. It was noted that the Packing Specifications issued by the S.C.C.R.A. in connection with the Seven Singapore Type Samples substantially conformed with the RMA Packing Specifications. The RTA of London reported that such organization had, as of April 1, 1955, adopted the RMA Packing Specifications. However, in the RTA of London contracts, non-conformance to these specifications is not a cause



Seen above is an over-all view of the International Quality Conference in session at the Essex House in New York City.

for rejection. In connection with Flat Bark, representatives of the Steamship Conference objected to the shipment of coated unwrapped bales, as permitted in the RMA specifications. The conference recommended experimental shipments to determine the practicability of this specification.

The conference approved in principle the desirability of uniform bale weights.

Methods of sampling, weighing, inspecting and arbitration procedures in use in the United States were fully explained to and observed by the delegates. From the conference discussions, it was clear that there is a need for accelerating both the filing and settlement of claims. The many problems involved in shipping, handling and delivery of natural rubber were discussed. Both shippers and steamship lines offered their cooperation in seeking solutions to these difficulties.

The over-all subject, contracts, was discussed by the conference, but in view of the fact that no universal contract exists, and the wide variation between contracts now in use, it was not possible to reach any solution in connection with this problem. It was pointed out that in the last analysis, a contract represented only an individual agreement between buyer and seller.

The conference expressed an opinion that it would be desirable if the producing countries, other than Malaya, adopted supervision over quality and packing, as exercised by the M.R.E.R.B.

Marbon Acquires New Site

The Marbon Chemical Division of the Borg-Warner Corp., Chicago, Ill., has announced that some preliminary engineering work will be started soon in anticipation of the future development of the site recently acquired by the company at Washington, West Va. There are no plans for actual construction of a plant there in the immediate future, according to Robert Shattuck, president of Marbon Chemical. It is anticipated that operations in the Gary, Ind., plant will continue. Also, the extent of any expansion would be determined by the requirements of Marbon's customers in the chemical industry, he said. The initial building project, if decided upon, would probably be "a very modest one," he added, with only a small portion of the acreage being utilized at the outset. Marbon Chemical presently employs 150 persons in its Gary, Ind., plant. The West Virginia land was purchased as a location for a possible extension of these facilities.

Fuller Addresses Thiokol Club

Dr. Calvin S. Fuller, of the Bell Telephone Laboratories, Murray Hill, N. J., was the principal speaker at a meeting of the Thiokol Technical Club held at the plant of the Thiokol Chemical Corporation in Trenton, N. J., on May 25. Dr. Fuller discussed "The Development and Applications of the Solar Battery" and demonstrated some of the unique possibilities of such batteries which utilize silicon cells. Over 200 members and guests attended the meeting, which was held outdoors.

FIRESTONE ANNOUNCES APPOINTMENTS TO SYNTHETIC RUBBER DIVISION

A. Miller

C. Hill

R. Bebb

W. Jordan

Firestone Tire & Rubber Co., Akron, Ohio, has announced several appointments to its newly-formed Synthetic Rubber Division. A. D. Miller has been named general manager of the new division, while C. A. Hill has been appointed production manager of its principal producing plants in Lake Charles, La., and Akron. Robert L. Bebb has been appointed manager of research and development for the new division, and Wilbur F. Jordan has been named sales manager.

Mr. Miller joined Firestone as a chemist in the general laboratory 21 years ago while still attending college. He holds a B.A. degree from Capital University and a degree in chemical engineering from the Case Institute of Technology. In 1941, he was named head of the Technical Division of the Firestone-operated Rubber Reserve plant in Akron. Two years later, he became technical manager for all the Firestone-operated synthetic rubber plants, and in 1947 was named general manager of synthetic rubber operations. In 1951, Mr. Miller was assigned special duties on the staffs of J. E. Trainer, now executive vice-president, and Dr. J. N. Street, director of chemical laboratories.

Mr. Hill joined the Firestone organization in 1942 and supervised construction of the government's synthetic rubber plant at Baton Rouge, La. Later, he joined the management staff at the Port Neches synthetic rubber plant which was then being operated by Firestone. In 1945, he became manager of the synthetic rubber plant operated by the company at Lake Charles, La. In 1947, Mr. Hill moved to Akron as general manager of the Akron and Lake Charles Plants.

Mr. Bebb joined Firestone's Research Division in 1938 and was put in charge of the company's synthetic rubber research project in 1945. He received a B.A. degree from Ohio State University in 1934 and his Ph.D. in organic chemistry from Iowa State College in 1938.

Mr. Jordan joined Firestone in 1937 and was assigned to the Research Division. From 1938 to 1945, he worked in the development laboratory of the company's plant in Fall River, Mass. He returned to Akron to the Adhesive Sales Department of Firestone's Industrial Products Co., and in 1947 was appointed manager of the Latex and Adhesive Division. The following year, he was appointed sales manager of the Latex Division. Mr. Jordan received his B.S. degree in 1936 and his M.S. in 1938 from the Massachusetts Institute of Technology.

General Tire Promotes Briggs

Promotion of Dr. Richard A. Briggs to head the polymerization research on olefinic materials for the General Tire & Rubber Co., Akron, Ohio, has been announced by G. H. Swart, director of central research. A senior research chemist with General Tire since January, 1954, Dr. Briggs began his research career with the Carbide & Carbon Chemicals Corp. in 1936. With another rubber company from 1940 to 1953, he rose from junior chemist to research scientist. During this period he also took part in work on the Manhattan District Project at Princeton University for a year. A native of Twinsburg, Ohio, Dr. Briggs attended Cuyahoga Falls high school. In 1935 he graduated with a bachelor of arts degree from Oberlin College, receiving his master's degree a year later. His Ph.D. was obtained from Princeton in 1940. A member of Phi Beta Kappa and Sigma Xi fraternities, Dr. Briggs participates in the Franklin Club of Akron. He is a member of the A.C.S.

Any changes in the information submitted for the 1955-56 RUBBER RED BOOK? Notify us today!

Safety Awards to Foreign Plants

Five foreign plants of the Goodyear Tire & Rubber Co. have been commended for outstanding safety records during 1954 by the National Safety Council. Receiving the Council's Award of Merit are Goodyear-Sweden and Goodyear-Java. The Swedish plant was commended for reducing its injury frequency rate 89% over its par rate, while improving 100% its injury severity rate over 1953. Goodyear-Java earned its award for topping the injury frequency rate by 48% and for a 72% improvement in its injury severity rate. The Council's Award of Honor will be presented to Goodyear-Brasil-Textile and Goodyear-Cuba. Goodyear-Brasil-Textile operated 5,917,248 man hours without a disabling injury from February 3, 1951 to December 31, 1954, to win its award. A duplicate award goes to Goodyear-Cuba for improving its injury frequency rate 97% over its par rate and for a 95% improvement of its injury severity rate. A certificate of Commendation will be awarded to Goodyear-Wallasey of England for its record of 624,732 man hours without a disabling injury from January 1, 1954 to December 31, 1954.

ASTM NATURAL RUBBER SUBCOMMITTEE REPORTS ON CINCINNATI MEETING

Subcommittee XII on Crude Natural Rubber of Committee D-11 on Rubber and Rubberlike Materials, American Society for Testing Materials, met on February 2 in Cincinnati, Ohio, in conjunction with the annual Committee Week of the parent organization. Approximately 70 members and guests attended the meeting. A summary report on the meeting has now been made available.

A report was presented by A. E. Juve on the work of his task group which is studying the cure characteristics of crude natural rubber. G. E. Decker reported on the results obtained from an interlaboratory test program, "Mooney Viscometer Cure Characteristics of Hevea Rubber." Five laboratories participated in studying the cure characteristics of samples of "red," "yellow" and "blue" technically classified smoked sheet rubbers and a sample of pale crepe. Very good agreement was obtained among the tests of the various laboratories. It was concluded that the viscometer was a reliable instrument for measuring scorch and rate of cure. It was recommended that this report be published in the ASTM "Bulletin."

Standard Sample Progress

Dr. R. D. Stiehler reported on the progress made in establishing a standard sample of natural rubber. In an experiment conducted in cooperation with the Goodyear Tire and Rubber Co., 16 bales of "yellow" T. C. rubber were blended in lots of 4 bales each in a Banbury mixer and then pelletized. Subsequent tests at the National Bureau of Standards showed that Banbury blending was effective in producing uniform batches of natural rubber. There were, however, differences among the different batches, so that a double blending operation would be required to produce a uniform lot of 10 to 12 tons of rubber.

It was suggested, though, that a single blending in the Banbury would probably be sufficient to prepare a standard sample if the rubber was prepared from a single lot of blended latex obtained from a single plantation. It was estimated that the cost would be in the order of $10,000, but that the financing of the project was still a problem.

The chairman, N. Bekkedahl (N.B.S.), then referred to an action taken by Committee D-11 concerning specifications and test methods for synthetic rubber. It had been decided to establish a new subcommittee on synthetic rubbers when the producing plants change over from government to private ownership. Since the new subcommittee had not yet been established, Subcommittee XII had been requested to place synthetic rubber on its agenda for this meeting.

A. W. Carpenter, secretary of Committee D-11, S. Collier, chairman of Committee D-11, and R. E. Hess, associate executive secretary of ASTM, explained how the Society might be of benefit to both the producers and consumers of synthetic rubber. They also explained the cooperative manner in which ASTM functions.

I. D. Patterson, Goodyear Tire and Rubber Co., representing the operators of the GR-S plants, reported on the results of a meeting which led to the following recommendations to Committee D-11:

"The synthetic rubber producers submit the following test methods for solid polymers from 'Specifications for Government Rubbers' as A.S.T.M. Standards:

"Chemical: (1) Determination of moisture via the hot mill method; (2) Determination of ash; (3) Determination of carbon black in masterbatch, and (4) Determination of bound styrene in butadiene-styrene rubbers.

"Physical: (5) Determination of Mooney viscosity; (6) Determination of properties of vulcanizate: compounding recipes; mixing procedures, and equipment.

"Standards for synthetic rubber latices will be proposed to the Rubber Latex Subcommittee.

"A secondary group of test methods from 'Specifications for Government Synthetic Rubbers' was listed as follows.

"Chemical: (1) Determination of organic acid and soap, and (2) Determination of stabilizer.

"Physical: (3) Determination of water absorption; (4) Determination of shrinkage, and (5) Determination of scorch time.

"No action by A.S.T.M. is recommended at this time by this group as the necessity for most of them is doubtful. The following is for the information of A.S.T.M. but does not require action by this organization:

"It is recommended that the National Bureau of Standards continue practice of supplying standard chemicals for compounding materials.

"The operators of synthetic rubber plants will strongly recommend that the F.F.C. Office of Synthetic Rubber schedule production during February, or not later than March, of a large amount of standard-sample low-temperature-polymerization rubber. The operators would then arrange transfer of a minimum of 30 bales to their respective inventories. A certain amount could also be transferred to the National Bureau of Standards as the 1955 standard sample. It is recommended that the assigned value, standard deviation, and range be determined by data from producing plant laboratories.

"It is also recommended the National Bureau of Standards set up a standard rubber sample for the year 1956 and each year thereafter, by purchasing such lots and determining the standards, preferably from an industry average. Standard carbon black determinates are also to be included."

A motion was approved that Subcommittee XII recommend that Committee D-11 accept these recommendations and that the Advisory Committee of D-11 set up a procedure for handling them.

The next meeting of Subcommittee XII will be held in conjunction with the semi-annual meeting of A.S.T.M. in Atlantic City, N. J., the week of June 27. Scheduled for discussion at the meeting are tentative specifications and methods of test for natural rubber.

Offers Colloid Science Program

In recognition of the increasing importance of advances in the field, a two-week Special Summer Program in "Colloid Science" will be presented from July 11 to July 22 during the 1955 Summer Session at the Massachusetts Institute of Technology. Professor Ernest H. Huntress, director of the M.I.T. Summer Session, points out that "the program is designed to explain to research workers, teachers, and executives what colloid science actually is and to discuss the very latest knowledge of colloidal phenomena." Dr. Ernst A. Hauser, Professor of Colloid Science at M.I.T., will direct the program. Guest lecturers will include: Dr. D. S. le Beau, director of research at the Midwest Rubber Reclaiming Co., East St. Louis, Ill.; Dr. Eugene Rochow, Professor of Chemistry at Harvard University, Cambridge, Mass.; Dr. D. L. Shanklin, assistant director of research at Dewey and Almy Chemical Co., Cambridge, Mass.; Dr. A. G. H. Dietz, Professor of Building Engineering and chairman of the Plastics Committee at M.I.T., and Dr. Alan S. Michaels, Assistant Professor of Chemical Engineering at M.I.T. Lecture topics will include: historical development of colloid science, the colloidal state, the production of colloidal systems, kinetics of colloidal particles, electrical properties of colloidal systems, surface phenomena, protection and sensitization, dispersion, coagulation and dissolution, the optics of colloidal systems, and industrial applications. Full details and application blanks may be obtained from the Summer Session Office, Room 7-103, Massachusetts Institute of Technology, Cambridge 39, Mass.

Enjay Opens New Laboratories

A new laboratory devoted to the technical side of the petrochemicals industry was officially opened on May 16 at Linden, N. J., by the Enjay Co., Inc., New York, N. Y. Located at the Esso Research Center in Linden, the new facility houses 11 separate laboratories plus office space and will be known as the Enjay Laboratories. It will serve as the scientific arm of Enjay, the Standard Oil (N. J.) affiliate marketing petrochemicals in the U. S., Canada and parts of Europe. The company also announced that a new wing about the same size as the main building itself is now under construction. This will contain numerous elaborate facilities for processing and testing materials and products made with Butyl rubber.

Monsanto Plans Stock Split

A 3-for-1 split of Monsanto Chemical Co. stock was recommended by directors of the company recently. Edgar M. Queeny, chairman, said if stockholders approve the split at a special meeting July 11, directors plan to put the stock on a $1 annual dividend basis. This is equivalent to $3 on the old stock on which $2.50 a share was paid in 1954. Shareholders will be asked to increase authorized common to 25 million shares of $2 par from 6 million shares of $5 par. Record date is expected to be July 11, Monsanto said.

ASTM SUBCOMMITTEE XIII HOLDS FIRST MEETING IN CLEVELAND

Subcommittee XIII on Synthetic Elastomers of Committee D-11 on Rubber and Rubberlike Materials, American Society for Testing Materials, held its first meeting on May 3 in Cleveland, Ohio. The decision to establish Subcommittee XIII had been taken by Committee D-11 during the Cincinnati, Ohio, meeting of the group during ASTM Committee Week, January 31 to February 4.

The Advisory Committee of Committee D-11 appointed Dr. B. S. Garvey, Jr., (Sharples Chemicals) chairman of Subcommittee XIII, and he was advised to send invitations to nine producers, nine consumers and an equal number of interested parties for the first meeting of the subcommittee on May 3.

At the meeting on May 3, it was decided that the scope of the subcommittee will be as follows: "This committee shall be responsible for the development and standardization of test methods, nomenclature and specifications relating to synthetic elastomers and their lactices."

In order to conduct the work planned for the subcommittee, six sections were established, each section having membership primarily of those who are especially interested in that particular function. Each section is headed by a chairman. The six sections cover (1) Sampling; (2) Chemical tests for solid polymers; (3) Physical test methods for solid polymers; (4) Latex test methods; (5) Nomenclature; (6) Reference materials.

Task Group Appointed

It was also voted by the subcommittee that the chairman appoint a task group to determine if FFC specifications as of April 15, 1955, are available, how many copies are available, and how long this supply will last. The group also has as its function the setting up of necessary working agreements between ASTM and FFC so that one or the other will have these specifications available as long as they are needed.

The subcommittee then voted that it recommend to D-11 that FFC test methods, as outlined in the specifications of April 15, 1955, be used until standard ASTM specifications are made. Even though the subcommittee accepted this by a majority vote, it was noted that such a move would not be permissible without conformity to ASTM procedure.

It was further agreed that six specific FFC tests be reviewed and submitted as quickly as possible to ASTM as standards. Of these, four are chemical and two are physical tests. The chemical tests cover the determination of moisture, ash, carbon black and bound styrene in butadiene-styrene rubbers, while the physical tests cover the determination of Mooney viscosity and vulcanizate properties. These are the six tests recommended by I. D. Patterson (Goodyear) to Subcommittee XII on Crude Natural Rubber during the Cincinnati meeting when the synthetic rubber subcommittee was under discussion.

The next meeting of the subcommittee will be held in conjunction with the meeting of the parent society in Atlantic City, N. J., during the week of June 27. The subcommittee will meet on Thursday, June 30, at 2:00 P.M. At this time, each section and the task group is expected to deliver a progress report on its activities.

R. P. DINSMORE NAMED TO RECEIVE CHARLES GOODYEAR MEDAL FOR 1955

R. P. Dinsmore

Dr. Ray P. Dinsmore, vice-president in charge of research and development for the Goodyear Tire & Rubber Co., has been chosen to receive the Charles Goodyear Medal for 1955 by the Division of Rubber Chemistry of the American Chemical Society. The Medal is awarded annually to a person who has made a valuable contribution to the science or technology of rubber or related subjects. Dr. Dinsmore was selected for this outstanding honor at the Executive Committee meeting of the Rubber Division, A.C.S., in Detroit on May 4 to 6. The award will be presented at the annual meeting of the organization in November.

A well-known authority on natural and synthetic rubber, Dr. Dinsmore has received national and international recognition for his many valuable contributions to the rubber industry. The diversified phases of the chemistry of rubber in which he has conducted and directed research and development investigations are well illustrated by the list of his publications which cover the fields of physical testing, compounding, vulcanization, theories of vulcanization, aging, processing and the economic problems of synthetic rubber.

As assistant deputy rubber director for the United States during World War II, Dr. Dinsmore organized and directed the research and development on synthetic rubber for the government. Also during this period, he coordinated activities of both industrial and university laboratories. He holds an honorary degree of doctor of engineering from the Case School of Applied Science and the Colwyn Gold Medal from the Institution of the Rubber Industry.

Dr. Dinsmore is past-president of the Division of Rubber Chemistry, A.C.S., past-president of the Akron Rubber Group, a trustee of the Midwest Research Institute, and a term member of the M.I.T. Corporation for the period 1954-59.

He is a Fellow of the Institution of the Rubber Industry, the American Institute of Chemists, American Association for the Advancement of Science, and a member of the Chemists' Club of New York. He has been a member of the American Institute of Chemical Engineers since 1927, and is presently a director of that organization. Dr. Dinsmore is president of the American Institute of Chemists for a one-year term expiring May, 1956.

Dr. Dinsmore has been associated with Goodyear for more than 40 years. He first joined the company's Experimental Department in 1914 upon his graduation from Massachusetts Institute of Technology with a degree in chemical engineering. In 1916, he went to the Goodyear factory in Bowmanville, Ont., Canada, as a compounder and later was assistant chief chemist at the company's New Toronto, Ont., plant. Then followed a period when he served as chief chemist at the Los Angeles and Akron plants until 1932, when he became assistant to the factory manager.

In 1939, Dr. Dinsmore was appointed development manager and since 1943 has been vice-president in charge of research and development. Dr. Dinsmore is the second scientist from Goodyear to receive the Charles Goodyear Medal, the first being Dr. L. B. Sebrell in 1943.

Visking Corp., Terre Haute, Ind., is manufacturing "Visqueen" film four-thousandths of an inch thick and 13 feet wide in 100-foot rolls for shielding construction work during bad weather. The film is made from Bakelite polyethylene.

Appoints Western Representative

Hale and Kullgren, Inc., Akron, Ohio, has announced the appointment of O'Connor & Co., Inc., 333 N. Michigan Ave., Chicago 1, Ill., as western sales representative. The concern will handle machinery sales of the National Erie line, including extruders, presses, mill and Banbury repair service. Maurice J. O'Connor is very active in the Chicago and Fort Wayne rubber groups and is well known to most of the rubber companies in that area. Hale and Kullgren are designers of machinery.

TRI-PARTITE MEETING SETS RECORD AT NIAGARA FALLS, ONTARIO

The three-way meeting held at Niagara Falls, Ontario, on May 20 proved to be a most successful venture. The morning and afternoon were devoted to the regular annual conference of the Rubber Division of the Chemical Institute of Canada while the evening was turned over to the annual joint international meeting of the Buffalo Rubber Group and the Ontario Rubber Section of the Institute. The C.I.C. Rubber Division had a record registration of well over 200, while some 300 were present at the banquet which featured the joint meeting in the evening. Approximately 160 members and guests attended the C.I.C. luncheon held during the day.

The meeting of th C.I.C. Rubber Division featured the presentation of eight papers, a business session and a special luncheon. Garnet Page, general manager of the Chemical Institute of Canada, was the guest speaker at the luncheon. He described both the national and international activities of the Institute, spelling out the numerous fields of activities of which the Institute is a part. He paid special tribute to the officers of the American Chemical Society who aided and abetted the formation of the Canadian group.

Election of new officers for 1955-56 featured the annual business meeting, the slate being presented by Tom Davies (Polymer Corp.) as chairman of the Nominating Committee. The new officers are: *Chairman*, Gordon Baxter (Firestone); *Vice-Chairman*, O. R. Huggenberger (Dominion Rubber); *Secretary-Treasurer*, K. Cunliffe (Barrie Rubber). New members of the Executive Committee include J. Carr (Dunlop), E. Gibbon (C. I. L.) and L. Huhta (Goodyear).

During the session, Carl Croakman (Binney & Smith) proposed that the chairman of the Ontario Rubber Section of the C. I. C. be made an ex-officio member of the Executive Committee of the C. I. C. Rubber Division and that the vice-chairman of the Section be made a permanent appointee to that Executive Committee. This motion was voted on and approved.

Eight Papers Presented

As indicated above, eight papers were presented at the technical sessions of the C. I. C. Rubber Division. The titles and authors of these papers (abstracts of which were published in our April, 1955, issue) were as follows:

"Polyurethane Products," by H. H. Abernathy, Elastomers Division, E. I. du Pont de Nemours, Inc., Wilmington, Delaware.

"Growth and Agglomeration of Particles in Low Temperature GR-S Latex," by R. W. Brown and L. H. Howland, Naugatuck Chemical Division, U. S. Rubber Co., Naugatuck, Conn.

"Rubber and Related Material Applications in Wire and Cable Manufacture," by George C. Winspear, R. T. Vanderbilt Co., New York, N. Y.

"Effect of Temperature on Tire Yarn and Cord Properties," by J. W. Illingworth and W. F. Kilby, Dunlop Research Center, Birmingham, England.

"Industrial Research and Development Techniques," by B. M. G. Zwicker, B. F. Goodrich Chemical Co., Cleveland, Ohio.

"Elastomeric Foams," by T. H. Rogers, Goodyear Tire & Rubber Co., Akron, Ohio.

"Nitrile Rubber in Polyvinyl Chloride Conveyor Belts," by D. Hay, H. A. Pfisterer and E. B. Storey, Polymer Corp., Ltd., Sarnia, Ontario.

"The Identification of Elastomers by Infra-Red Spectroscopy," by W. H. T. Davison, Dunlop Research Center, Birmingham, England.

F. R. Gorrie (Cabot Carbon), retiring chairman of the Rubber Division, presided at the morning technical session and J. G. Dolan (British Rubber), chairman of the Quebec Rubber & Plastics Group, at the afternoon session. Mr. Gorrie also acted as toastmaster at the divisional luncheon and introduced the speaker. He also introduced those sitting at the head table.

Lerner Is Banquet Speaker

The speaker at the joint meeting of the Buffalo Rubber Group and the C. I. C. Ontario Rubber Section, which consisted primarily of a banquet held in the grand ballroom of the Sheraton Brock Hotel in Niagara Falls, Ontario, was M. E. Lerner, editor of RUBBER AGE. Mr. Lerner discussed "Some General Observations on the European Rubber Manufacturing Industry."

In his talk, which was based on an extended tour of nine European countries last summer, during which he visited some 36 rubber factories and laboratories, and which was accompanied by numerous slides, the speaker indicated that while European rubber plants were on a par technically with those of the United States and Canada, they were still somewhat behind those plants from a mechanical point of view. He stated that one secured the impression that rubber plants in Europe were bursting at the seams and factory expansion was a "must" for many of these plants.

In concluding his talk, Mr. Lerner emphasized the point that Europe will be self-sufficient in synthetic rubber supplies within the next few years. As evidence for this statement, he pointed to GR-S plant activities in England, Italy and Western Germany and to Butyl rubber activity in France. Western Germany in particular, he said, is destined to recover a good deal of the European synthetic rubber market in the not too distant future.

The speaker was introduced by W. J. Nichol (Canadian Dunlop), chairman of the Ontario Rubber Section, who also introduced members and guests seated on the dais. These included C. E. Johnson (Hewitt-Robins), chairman of the Buffalo Rubber Group, E. R. Rowzee (Polymer Corp.), president of the Chemical Institute of Canada, Dr. Page, A. M. Neal (DuPont), secretary of the A. C. S. Rubber Division, and M. Studebaker (Phillips Chemical), chairman of the Liaison Committee of the A. C. S. Rubber Division.

Acheson Colloids Co., Port Huron, Mich., has released an illustrated bulletin discussing the use of "dag" Colloidal Graphite as a parting compound. Request Bulletin No. 427.

Patent Vulcanization Process

Daniel Rhee, president of the Rhee Elastic Thread Co., Warren, R. I., and Donald Cockburn, have been awarded U. S. Patent No. 2,703,436 entitled "Method of Vulcanizing Rubber Sheet Material." In the vulcanizing of sheet rubber for the manufacture of rubber threads, it has been customary to form the sheet rubber into a roll and to apply heat to the outside thereof. According to Messrs. Rhee and Cockburn, however, this method has been unsatisfactory in that the outer parts of the rubber roll receive more heat than the inner portions, with the result that the vulcanized sheet and the threads cut from it have non-uniform physical properties. In addition, those portions of the rubber sheet that receive the greatest heat are relatively dark in color and must be disposed of as waste. Furthermore, the threads cannot be produced in continuous lengths of more than 500 yards and are often rendered defective because of rough surfaces or friction holes in the original uncured rubber stock, the inventors explain.

To cope with these conditions, Messrs. Rhee and Cockburn have devised a process which, it is claimed, provides for the first time a commercially successful method of vulcanizing sheet rubber to produce a product of quality suitable in its entirety for the manufacture of rubber thread. In accordance with their practice, a roll is made of alternating layers of the uncured sheet rubber and a thin insulating material, such as cellophane or glassine paper which is maintained under adequate tension. This roll is heated to vulcanizing temperature by positioning it in a high frequency electric field; simultaneously the atmosphere surrounding the roll is raised to the vulcanizing temperature by an independent means, such as steam coils. Thereafter, the steam coils provide the vulcanizing heat. After the required period of time, the cured sheet is removed from the roll and may be processed into threads in excess of 2,000 yards in length. The patent has been assigned to the Rhee Elastic Thread Co.

3M Names Norman and Kochis

Appointment of Howard F. Norman and August J. Kochis to new positions in the Adhesives and Coatings division has been announced by the Minnesota Mining and Manufacturing Co. Mr. Norman has been appointed product manager, industrial trades, and will continue to make his headquarters in Detroit. His new duties include coordination of sales activities in eastern and Great Lakes sales areas. He joined 3M in 1940 as a product development chemist. He was made a sales engineer in 1942 and regional industrial sales manager in 1946. Since 1953 he has been product manager, government trades. Mr. Kochis has been named government representative for the division and will headquarter at 3M's government office in Washington, D. C. He joined 3M in 1947 as an industrial sales engineer in the Boston area.

Any changes in the information submitted for the 1955-56 RUBBER RED BOOK? Notify us today!

In heavy duty tires

you can provide BETTER RESISTANCE

to

CUTS

CRACKS

CRACK GROWTH

with

STATEX·R®

HAF

And with this superior black
you'll give your tires **GOOD BALANCE** between
HIGH ABRASION and LOW HEAT BUILD-UP

COLUMBIAN CARBON COMPANY

• A COLUMBIAN COLLOID •

5000 TONS OF SMOKE A DAY

COLUMBIAN CARBON CO. · BINNEY & SMITH INC.

ISAF (Intermediate Super Abrasion Furnace)

STATEX®-125

HAF (High Abrasion Furnace)

STATEX-R

MPC (Medium Processing Channel)

STANDARD MICRONEX®

EPC (Easy Processing Channel)

MICRONEX W-6

FF (Fine Furnace)

STATEX-B

FEF (Fast Extruding Furnace)

STATEX-M

HMF (High Modulus Furnace)

STATEX-93

SRF (Semi-Reinforcing Furnace)

FURNEX®

COLUMBIAN CARBON CO. • BINNEY & SMITH INC.

MANUFACTURER DISTRIBUTOR

WASHINGTON ELECTS OFFICERS; HEARS BUGBEE ON NATURAL

The May 18th meeting of the Washington Rubber Group, held at the Pepco Auditorium in Washington, D. C., featured an announcement on the results of a letter ballot for the election of officers for the 1955-56 season of the group, and a talk by H. C. Bugbee, president of the Natural Rubber Bureau, Washington, D. C. The following members have been elected to office for the 1955-56 season of the group:

President, W. James Sears (RMA); *Vice-President,* Elliott A. Bukzin (Bureau of Ships); *Secretary,* William Dunkle (Goodyear); *Treasurer,* Douglas K. Bonn (U. S. Rubber).

In his talk, Mr. Bugbee emphasized that in the competition shaping up with privately operated synthetic plants, the natural rubber industry is strongly depending on research to abet the lead nature had bestowed on its product. "Natural depends for its future on the new uses and products that the research now being carried on will make possible," Mr. Bugbee said. "And mind you, natural research begins with the head start nature has already given it."

Mr. Bugbee noted a variety of experiments now being carried on in natural rubber laboratories in England, France, Holland, Indonesia and Malaya, and made particular reference to work that would add tough, abrasive qualities to the advantages of resiliency and heat dissipation that were natural's to begin with. Referring to the new work now being carried on with cyclized rubber, Mr. Bugbee said: "Nature gave natural the qualities of elasticity, resiliency and heat dissipation that make it preferable for so many purposes. In cyclized rubber, research has produced a tough natural rubber with wear resistance that makes it ideal for shoe soling and other leather substitutes," the speaker disclosed.

Natural-Synthetic Competition

With reference to the competition between natural and synthetic, Mr. Bugbee stressed their roles as co-commodities sharing the market. "Natural does not consider the forthcoming competition with synthetic a drag-out battle for the market in which one or the other will dominate. Rather we believe that in the decade to come, natural and synthetic will exist as co-commodities, each taking the share of the market that it earns for itself—and sharing a portion of the market together."

Mr. Bugbee pointed out that work was being done in the area of mixing natural and synthetic that "combined the best qualities of each and could well open up completely new fields." He called attention to the fact that a good many of the stories that had been appearing since the transfer of the synthetic plants to private hands inferred that the demise of natural was purely a matter of time.

"The facts are, though," Mr. Bugbee said, "that natural is here to stay. It is going to stay because the growers of natural rubber are alert and on their toes, carrying on a program of research directed at marketing a constantly improving product at a competitive price."

Coming Events in the Rubber Industry

June 19-23. American Society of Mechanical Engineers, Diamond Jubilee Semi-Annual Meeting, Hotel Statler, Boston, Mass.

June 21. Buffalo Rubber Group, Golf Outing, Lancaster Country Club, Lancaster, N. Y.

June 24. Detroit Rubber and Plastics Group, Annual Golf Outing, Western Golf and Country Club, Detroit, Mich.

June 26-July 1. American Society for Testing Materials, Annual Meeting, Chalfonte-Haddon Hall, Atlantic City, N. J.

July 22. Chicago Rubber Group, Golf Outing, St. Andrews Golf and Country Club, West Chicago, Ill.

July 28. New York Rubber Group, Golf Tournament, Shackamaxon Country Club, Scotch Plains, N. J.

Aug. 19. Philadelphia Rubber Group, Summer Outing, Manufacturers' Country Club, Oreland, Penna.

Sept. 17. Connecticut Rubber Group, Summer Outing.

Sept. 22. Southern Ohio Rubber Group, Fall Meeting, Engineer's Club, Dayton, Ohio.

Sept. 23. Northern California Rubber Group.

Sept. 25. Northern California Rubber Group, Annual Family Summer Outing.

Sept. 29. Fort Wayne Rubber & Plastics Group, Hotel Van Orman, Fort Wayne, Ind.

Oct. 4. Buffalo Rubber Group, Fall Meeting, Hotel Westbrook, Buffalo, N. Y.

Oct. 4. Los Angeles Rubber Group, Statler Hotel, Los Angeles, Calif.

Oct. 7. Chicago Rubber Group.

Oct. 7. Detroit Rubber and Plastics Group, Fall Meeting, Detroit-Leland Hotel, Detroit, Mich.

Oct. 7. New York Rubber Group, Fall Meeting, Henry Hudson Hotel, New York, N. Y.

Oct. 14. Boston Rubber Group, Fall Meeting, Somerset Hotel, Boston, Mass.

Oct. 14. Northern California Rubber Group.

Oct. 28. Akron Rubber Group, Mayflower Hotel, Akron, Ohio.

Oct. 28. Philadelphia Rubber Group, Fall Meeting, Poor Richard Club, Philadelphia, Penna.

Nov. 1. Los Angeles Rubber Group, Statler Hotel, Los Angeles, Calif.

Nov. 2-4. Division of Rubber Chemistry, A.C.S., Fall Meeting, Bellevue-Stratford Hotel, Philadelphia, Penna.

Nov. 3. Rhode Island Rubber Club, Fall Meeting, Pawtucket Country Club, Pawtucket, R. I.

Nov. 10. Northern California Rubber Group.

Nov. 11. Chicago Rubber Group.

Nov. 13-18. American Society of Mechanical Engineers, Diamond Jubilee Annual Meeting, Hotel Congress, Chicago, Ill.

Nov. 18. Connecticut Rubber Group, Fall Meeting.

Dec. 1. Fort Wayne Rubber and Plastics Group, Hotel Van Orman, Fort Wayne, Ind.

Dec. 7. Buffalo Rubber Group, Xmas Party, Buffalo Trap and Field Club, Buffalo, N. Y.

Dec. 9. Detroit Rubber and Plastics Group, Annual Christmas Party, Sheraton-Cadillac Hotel, Detroit, Mich.

Dec. 9. New York Rubber Group, Xmas Party, Henry Hudson Hotel, New York, N. Y.

Dec. 10. Southern Ohio Rubber Group, Xmas Party, Miami Valley Golf Club.

Dec. 16. Boston Rubber Group, Xmas Party, Somerset Hotel, Boston, Mass.

Dec. 16. Chicago Rubber Group.

Dec. 16. Los Angeles Rubber Group, Xmas Party, Ambassador Hotel, Los Angeles, Calif.

Largest Rubber Producer

Harvey S. Firestone, chairman of the board of the Firestone Tire & Rubber Co., Akron, Ohio, stated recently that his company is now the world's largest producer of rubber. "Record high production at two synthetic rubber plants, purchased recently by Firestone from the government, and at the company's extensive natural rubber plantations in Liberia, amounts to more than 1,000,000 pounds a day," Mr. Firestone stated. "As the world's largest producer of rubber, and with our intensive research program, we will be able to supply our own factories with constantly improved types of rubber. As a result, Firestone will provide even better quality tires and other rubber products for its customers," Mr. Firestone said.

BALL CALLS FOR ELECTION OF GOODYEAR TO HALL OF FAME

In a recent statement, John M. Ball (Midwest Rubber Reclaiming), chairman of the Division of Rubber Chemistry, American Chemical Society, called for the election of Charles Goodyear to the Hall of Fame maintained by New York University at University Heights, New York, N. Y. To be elected to the Hall of Fame, an individual must have been dead more than twenty-five years, must have been a citizen of the United States, and must receive a majority vote. Nominations may be made by any citizen. The electors comprise 126 eminent persons throughout the country who have been chosen by the Senate of New York University.

Mr. Ball noted that only five inventors have been elected to the Hall of Fame: Eli Whitney, Samuel Morse, Elias Howe, Alexander Bell and Robert Fulton. Two other inventors were nominated previously and will be voted upon this year—George Westinghouse and Wilbur Wright. Mr. Ball has nominated Charles Goodyear so that he will be voted upon again this year. The election this year will be from a ballot of 209 persons, the largest number since 1900. A maximum of seven nominees will be selected.

The division chairman made the point that one reason that Charles Goodyear has so far not been elected is that it has probably been difficult for the Electors to grasp the significance of a *process* as opposed to a *product*. "The pre-eminence of our candidate is, however, unquestioned," Mr. Ball declared.

Mr. Ball recaled that in 1939, E. B. Curtis, then chairman of the Rubber Division, appointed a Hall of Fame Committee to promote the candidacy of Charles Goodyear. For financial reasons, this committee found itself unable to carry out the plans which it had made for getting information to the Electors.

The chairman of the Hall of Fame Committee this year is Dr. Harry L. Fisher, past-president of the American Chemical Society, who will do his best to see that the Electors are properly informed on the merits of Charles Goodyear as a candidate. The results of the election will be announced on November 1.

Mr. Ball stated that the Electors, if they see fit to honor Charles Goodyear, will do a great deal for the industry and for all individuals "who cherish the memory of the founder of the rubber industry."

Plans Aniline Oil Plant

National Aniline Division, Allied Chemical & Dye Corp., New York, N. Y., has announced plans to construct another large plant for the manufacture of aniline oil at Moundsville, West Va. The new aniline plant will be a duplicate of the present plant which began operations in January, 1954. As in the existing location, aniline will be produced in the new plant by a modern catalytic process developed in the company's own research laboratories. The company recently announced plans to construct a major plant for the production of isocyanates at Moundsville.

"RUBBER AGE" ESTABLISHES AWARD AT UNIVERSITY OF AKRON

An annual prize in the amount of $100 for the student who prepares the best term paper or the best thesis for his degree in rubber chemistry has been established by RUBBER AGE at the University of Akron. Selection of the prize winning paper or thesis will be made by a special board consisting of Dr. Maurice Morton, Professor of Polymer Chemistry; Dr. Thomas Sumner, Professor of Chemistry, and Professor Emeritus G. Stafford Whitby.

Establishment of the new award coincided with the distribution of special honors at the University on May 19. The initial RUBBER AGE Award was shared by Fred J. Kovac and Kermit C. Beach for their joint thesis on "A Compounding Study of Butyl Rubber." The presentation was made by Peter P. Pinto, general manager of this publication.

Messrs. Kovac and Beach are to receive their master's degrees from Akron University this month. Mr. Kovac was graduated from Akron University in 1952 with a bachelor's degree after receiving an American Chemical Society Award. He is employed as a research chemist by the Firestone Tire & Rubber Co. Mr. Beach also received his bachelor's degree from the University in 1952. He is employed as a research chemist by the Goodyear Tire & Rubber Co., Akron, Ohio.

The RUBBER AGE Award was established to encourage outstanding contributions in scholastic effort and to promote educational progress in rubber technology. When possible, the prize-winning papers or theses will be published in RUBBER AGE, either in full or in condensed form. Dr. Whitby has undertaken to condense the thesis on "A Compounding Study of Butyl Rubber" for such purpose, and will be listed as a co-author. According to present plans, future awards will be made at the annual Chemical Alumni banquets.

Elected Thermoid Directors

On May 25, Thermoid Co., Trenton, N. J., announced the election of three "replacements" on its board of directors. A recent Court order, granted to three shareholders, deferred an annual stockholders' meeting for election of directors until July 6. A company spokesman said the naming of replacements was not prohibited by the order. The new directors are David J. Connolly, president of the Federal Trust Company of Newark; Colonel William S. Weeks, president of the Raritan State Bank and a director of the State Chamber of Commerce, and H. E. Ryker, an industrial management consultant and formerly a vice-president and director of the Lockheed Aircraft Corp. They replace Russell H. Temple, company treasurer; Lester F. Cox, retired executive vice-president, and Paul D. Sowell, head of Brager's, Inc., Baltimore department store. Frederic E. Schluter, Thermoid board chairman, announced the replacements. George S. Fabel, president, said the Securities and Exchange Commission and others interested had been informed of the new selections. Three shareholders, Leon Rubin of Brooklyn, holding 25 shares, and Sidney A. Speed and Bernard H. Freed, both of Cleveland and each owning 100 shares, petitioned Superior Court May 2 for postponement of the annual stockholders' meeting from May 3. They asked time to investigate the company's Federal tax situation. A postponement of the meeting for 60 days was fixed by the court. The announcement of the directors' selections also said Frederick W. Miller had been named comptroller. He has been comptroller and treasurer of Bourjois, Inc., and is a certified public accountant. He has also been a member of the faculty of the Harvard University Graduate School of Business.

Need a personal copy of RUBBER AGE? Use the coupon on page 449.

Harmon Named to New Post

Harold J. Harmon, manager of the Marion, Ind., plant of the General Tire & Rubber Co., has been promoted to assistant manager of the company's Overseas Division. Formerly factory manager of General's Akron plant, Mr. Harmon served two years in Marion. He directed the conversion of the former Crosley Motor Car Division plant into a rubber and plastics operation employing more than 500 persons. Mr. Harmon has been with General Tire since 1944 and was named production manager two years later. In 1947, he was appointed factory superintendent and a short time later was moved up to the position of factory manager.

In his new post, Mr. Harmon will assist Fred. H. Comey, Overseas Division manager, in the operations end of General's plants in Mexico, Chile, Venezuela, Brazil, Spain, Israel, Portugal, Holland and South Africa. General also has affiliated plants in Switzerland and Italy. Mr. Harmon, a native of Indiana, is a mechanical engineer graduate of Purdue University, and a member of Phi Delta Theta. He is a member of the American Society of Mechanical Engineers, Kiwanis Club and Knights of Columbus. Mr. Harmon will headquarter in Akron in his new assignment.

Technical Reports on Neoprene

The Elastomers Division of E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Del., has made available three technical reports on neoprene: The first of these, BL-284, is entitled "Hard Neoprene Compounds with Excellent Processing Safety"; another, BL-285, is entitled "Neoprene Type KNR—A Processing Aid for High Durometer Neoprene Stocks"; the third, BL-286, covers "An Economical Neoprene Blend." Copies of these three technical reports may be obtained from the company.

Scott Named Vice-President

Robert D. Scott

Robert D. Scott has been named vice-president of manufacturing for the B. F. Goodrich Chemical Co., Cleveland, Ohio, succeeding William I. Burt, who was elected president of Goodrich-Gulf Chemicals, Inc., in January of this year. Mr. Scott, former general manager of plants for the chemical company, was graduated from the University of Kentucky in 1934, with a B.S. in industrial chemistry. He received his M.S. in chemical engineering in 1935 from Massachusetts Institute of Technology, and after graduation joined the B. F. Goodrich Co. as an engineer in the Akron, Ohio rubber laboratories. Shortly threafter, he was transferred to chemical plant No. 3 in Akron, and in 1940 became technical superintendent. Later in that year he moved to Niagara Falls, N. Y., as general foreman of a new plant being constructed there for the manufacture of Geon vinyl resins.

Mr. Scott became Niagara Falls plant manager in 1941, and in 1942 he was named manager of the newly constructed Louisville, Ky., Geon plant. He held this position until 1951, when he became general manager of plants for Goodrich Chemical with headquarters in the Cleveland home office. Mr. Scott attended the Harvard Business School advanced management program in 1953. Mr. Scott is a member of the American Institute of Chemical Engineers, and serves on the Air Pollution Abatement Committee of the Manufacturing Chemists' Association.

Celluflex CEF Plasticizer

The Chemical Division of the Celanese Corp. of America, New York, N. Y., has introduced "Celluflex CEF," a new plasticizer which is said to build exceptional fire-retardancy into a wide variety of plastics and surface coatings—including polyesters, vinyls, polyurethanes, etc. The product is said to possess excellent low-temperature properties and ultraviolet light stability. It has a water-white color clear enough for transparent coatings. Celluflex CEF (trisBeta-chlorethyl phosphate) is also said to be an effective flexibilizing agent for polyesters, vinyls and cellulosics.

Visual Inspection Guides

The Bureau of Ships of the Department of the Navy, Washington, D. C., has been issuing, recently, a number of visual inspection guides for rubber articles covering the principal classes of rubber items procured for shipboard use. The purpose of these publications is to furnish government inspectors criteria for visual inspection of naval rubber articles, and to promote better understanding between suppliers, inspectors and procuring activities regarding the quality requirements for these articles. The first and second guides in this series for rubber hose and all-rubber gloves have now been converted to Military Standards MIL-STD-166 and MIL-STD-168, respectively. This broadens their potential usefulness by all the divisions of the Department of Defense. The "Glossary of Terms for Visible Defects Occurring in Rubber Manufacture" has also been revised and issued as Military Standard MIL-STD-177, "Terms for Visible Defects of Rubber Products." Contractors may obtain these publications through their regular source of supply of military specifications.

Issued during the past year were the following new Bureau of Ships publications in this series: Visible Inspection Guide for Rubber Vee-Belts (NavShips 250-344-4); Visible Inspection Guide for Rubber Sheet Material (NavShips 250-344-5); Visible Inspection Guide for Rubber Extruded Goods (NavShips 250-344-6); Visible Inspection Guide for Rubber Molded Items (NavShips 250-344-7); Visible Inspection Guide for Cellular Rubber Items (NavShips 250-344-8); Visible Inspection Guide for Hard Rubber Items (NavShips 250-344-9); and Visible Inspection Guide for Rubber-O-Rings (NavShips 250-344-10). These pamphlets are available from the Bureau of Ships, Elastomers Branch, Washington 25, D. C., to rubber manufacturers.

LABOR NOTES

Goodyear Tire & Rubber Co. has signed an agreement with the United Rubber Workers, C. I. O., increasing pensions and liberalizing sickness and accident benefits. No wage modifications were included. The agreement covers about 28,000 employees in ten plants. It must be approved by the union membership, Goodyear's directors and shareholders, and the Internal Revenue Service. Under the agreement, minimum monthly pensions would be increased from $1.50 to $1.80 for each year of service. Retirement would be required at the age of 65 after February 1, 1957, and weekly sickness and accident benefits would be increased from $35 to $40 for men, and from $25 to $30 for women.

The signing of a two-year contract recently concluded negotiations between the Armstrong Rubber Co. of West Haven, Conn., and Local 93 of the U.R.W. The new contract which affects all production and maintenance employees at Armstrong includes modifications in the clauses concerning seniority, vacations, holiday pay, and procedure for the distribution of overtime.

Appointed Texas-U.S. Manager

Thomas A. McCoy

Thomas A. McCoy has been appointed manager of the Texas-U. S. Chemical Co., William P. Gee, president, announced recently. Mr. McCoy will be responsible for the company's synthetic rubber operations in Port Neches, Texas. This will include synthetic rubber research and sales as well as production. Mr. McCoy began his career in synthetic rubber in 1944 as a project engineer in the huge synthetic rubber plant in Institute, West Va. He rose through the ranks to plant engineer. In 1947 he was transferred to the Borger, Texas, synthetic plant operated by U. S. Rubber and continued his rise to the position of factory manager. He became factory manager of the Port Neches synthetic rubber plant when it was reactivated by U. S. Rubber in 1950, and has served in that capacity for the past four and one-half years. He is a vice-president and director of the Texas Manufacturers Association, and vice-president of the First Savings Association of Port Neches.

Sponge Rubber Lubricator

A sponge rubber lubricator designed to end the perennial journal hot box, the railroad's most costly freight car operating problem, has been developed by the U. S. Rubber Co., New York, N. Y. The lubricator, called "Ever-Pac," forms a sealed oil reservoir at the bottom of the journal box, and pumps, squeezes and wick-feeds filtered oil into a felt pad that is in constant contact with the rotating journal.

Commercial GR-S Type Polymers

There appears on the following two pages a table listing all the presently available grades of GR-S type polymers as announced by purchasers of synthetic plants formerly operated by the government. Compiled as a service to our readers, this table will be brought up-to-date in succeeding issues so that consumers can be apprised of the commercial availability of GR-S type polymers at all times. Readers may secure reprints of the table by writing RUBBER AGE.

DATA ON COMMERCIALLY AVAILABLE GR-S TYPE SYNTHETIC RUBBER POLYMERS

This table has been compiled for the benefit of all consumers of synthetic rubber. It is intended to indicate which of the GR-S type synthetic rubbers are currently being marketed by purchasers of the synthetic rubber plants formerly owned by the government. It should be noted that some of the current producers have not as yet adopted specific trade names, and in such cases letters based on the company's initials or the word "type" are employed. While all the price information shown has been carefully checked, it is suggested that users of this table confirm any price before forwarding orders. The same caution is suggested for freight charges.

Government Code	*Type of Polymer*	*Commercial Name*	*Current Producer*	*Cents per lb. (carload)*	*Freight Charges*
GR-S 1000	Hot GR-S (NP)	Butaprene S-1000	Firestone	23.00	Extra
		Plioflex 1000	Goodyear Synthetic	24.25	Prepaid
		Philprene 1000	Phillips Chemical	25.00	Allowed
		SC-1000	Shell Chemical	23.00	Extra
		GR-S Type 1000	Texas-U. S. Chemical	24.25	Prepaid
GR-S 1001	Hot GR-S (NP)	Butaprene S-1001	Firestone	23.00	Extra
		G-G 1001	Goodrich-Gulf	24.10	Prepaid
		Philprene 1001	Phillips Chemical	25.00	Allowed
		SC-1001	Shell Chemical	23.00	Extra
		GR-S Type 1001	Texas-U. S. Chemical	24.25	Prepaid
GR-S 1002	Hot GR-S (NP)	Butaprene S-1002	Firestone	24.55	Extra
		G-G 1002	Goodrich-Gulf	24.35	Prepaid
		GR-S Type 1002	Texas-U. S. Chemical	24.50	Prepaid
GR-S 1004	Hot GR-S (NP)	Butaprene S-1004	Firestone	23.00	Extra
GR-S 1005	Hot GR-S (NP)	Butaprene S-1005	Firestone	24.55	Extra
GR-S 1006	Hot GR-S (NP)	Butaprene S-1006	Firestone	23.00	Extra
		G-G 1006	Goodrich-Gulf	24.10	Prepaid
		Plioflex 1006	Goodyear Synthetic	24.25	Prepaid
		Philprene 1006	Phillips Chemical	25.00	Allowed
		SC-1006	Shell Chemical	23.00	Extra
		GR-S Type 1006	Texas-U. S. Chemical	24.25	Prepaid
GR-S 1007	Hot GR-S (NP)	GR-S Type 1007	Texas-U. S. Chemical	24.25	Prepaid
GR-S 1009	Hot GR-S (NP)	Butaprene S-1009	Firestone	24.55	Extra
		Philprene 1009	Phillips Chemical	25.50	Allowed
		GR-S Type 1009	Texas-U. S. Chemical	24.75	Prepaid
GR-S 1010	Hot GR-S (NP)	Butaprene S-1010	Firestone	23.00	Extra
GR-S 1012	Hot GR-S (NP)	Butaprene S-1012	Firestone	24.30	Extra
		GR-S Type 1012	Texas-U. S. Chemical	24.25	Prepaid
GR-S 1013	Hot GR-S (NP)	Butaprene S-1013	Firestone	24.30	Extra
		GR-S Type 1013	Texas-U. S. Chemical	25.00	Prepaid
GR-S 1014	Hot GR-S (NP)	Butaprene S-1014	Firestone	24.80	Extra
GR-S 1015	Hot GR-S (NP)	Butaprene S-1015	Firestone	24.55	Extra
GR-S 1016	Hot GR-S (NP)	Naugapol 1016	Naugatuck Chemical	25.50	Prepaid
GR-S 1018	Hot GR-S (NP)	Naugapol 1018	Naugatuck Chemical	26.00	Prepaid
		Philprene 1018	Phillips Chemical	25.75	Allowed
GR-S 1019	Hot GR-S (NP)	Naugapol 1019	Naugatuck Chemical	25.50	Prepaid
		Philprene 1019	Phillips Chemical	25.25	Allowed
GR-S 1021	Hot GR-S (NP)	Naugapol 1021	Naugatuck Chemical	29.00	Prepaid
GR-S 1022	Hot GR-S (NP)	Naugapol 1022	Naugatuck Chemical	26.00	Prepaid
GR-S 1023	Hot GR-S (NP)	Naugapol 1023	Naugatuck Chemical	26.50	Prepaid
GR-S 1100	Hot Black (MB)	SC-1100	Shell Chemical	18.50	Extra
GR-S 1500	Cold GR-S (NP)	ASRC 1500	American Synthetic	24.10	Prepaid
		Copo 1500	Copolymer	24.10	Prepaid
		Butaprene S-1500	Firestone	23.00	Extra
		G-G 1500	Goodrich-Gulf	24.10	Prepaid
		Philprene 1500	Phillips Chemical	25.00	Allowed
		SC-1500	Shell Chemical	23.00	Extra
		GR-S Type 1500	Texas-U. S. Chemical	24.25	Prepaid
GR-S 1501	Cold GR-S (NP)	G-G 1501	Goodrich-Gulf	24.10	Prepaid
		SC-1501	Shell Chemical	23.00	Extra
GR-S 1502	Cold GR-S (NP)	ASRC 1502	American Synthetic	24.10	Prepaid
		Copo 1502	Copolymer	24.10	Prepaid
		Butaprene S-1502	Firestone	23.00	Extra
		G-G 1502	Goodrich-Gulf	24.10	Prepaid
		Plioflex 1502	Goodyear Synthetic	24.25	Prepaid
		Philprene 1502	Phillips Chemical	25.00	Allowed
		SC-1502	Shell Chemical	23.00	Extra

Government Code	*Type of Polymer*	*Commercial Name*	*Current Producer*	*Cents per lb. (carload)*	*Freight Charges*
GR-S 1503	Cold GR-S (NP)	Naugapol 1503	Naugatuck Chemical	25.50	Prepaid
GR-S 1504	Cold GR-S (NP)	Naugapol 1504	Naugatuck Chemical	26.50	Prepaid
GR-S 1600	Cold Black (MB)	Philprene 1600	Phillips Chemical	20.00	Allowed
		SC-1600	Shell Chemical	18.50	Extra
GR-S 1601	Cold Black (MB)	Philprene 1601	Phillips Chemical	20.00	Allowed
GR-S 1602	Cold Black (MB)	Philprene 1602	Phillips Chemical	20.00	Allowed
		SC-1602	Shell Chemical	18.50	Extra
GR-S 1703	Cold Oil (MB)	Butaprene S-1703	Firestone	19.50	Extra
		G-G 1703	Goodrich-Gulf	20.60	Prepaid
		Plioflex 1703	Goodyear Synthetic	20.75	Prepaid
		Philprene 1703	Phillips Chemical	21.20	Allowed
		SC-1703	Shell Chemical	19.50	Extra
		GR-S Type 1703	Texas-U. S. Chemical	20.75	Prepaid
GR-S 1705	Cold Oil (MB)	Butaprene S-1705	Firestone	19.25	Extra
		G-G 1705	Goodrich-Gulf	20.35	Prepaid
GR-S 1706	Cold Oil (MB)	G-G 1706	Goodrich-Gulf	20.35	Prepaid
		Philprene 1706	Phillips Chemical	21.00	Allowed
		SC-1706	Shell Chemical	19.25	Extra
GR-S 1707	Cold Oil (MB)	G-G 1707	Goodrich-Gulf	19.10	Prepaid
		SC-1707	Shell Chemical	18.00	Extra
		GR-S Type 1707	Texas-U. S. Chemical	19.25	Prepaid
GR-S 1708	Cold Oil (MB)	Philprene 1708	Phillips Chemical	19.70	Allowed
GR-S 1709	Cold Oil (MB)	G-G 1709	Goodrich-Gulf	18.85	Prepaid
		SC-1709	Shell Chemical	17.75	Extra
GR-S 1710	Cold Oil (MB)	Butaprene S-1710	Firestone	17.75	Extra
		G-G 1710	Goodrich-Gulf	18.85	Prepaid
GR-S 1711	Cold Oil (MB)	G-G 1711	Goodrich-Gulf	18.85	Prepaid
		Philprene 1711	Phillips Chemical	19.40	Allowed
		GR-S Type 1711	Texas-U. S. Chemical	19.00	Prepaid
GR-S 1712	Cold Oil (MB)	Copo 1712	Copolymer	18.85	Prepaid
		Butaprene S-1712	Firestone	17.75	Extra
		G-G 1712	Goodrich-Gulf	18.85	Prepaid
		Philprene 1712	Phillips Chemical	19.40	Allowed
		SC-1712	Shell Chemical	17.75	Extra
GR-S 1801	Cold Oil Black (MB)	Philprene 1803 *	Phillips Chemical	18.00	Allowed
		SC-1801	Shell Chemical	17.00	Extra
GR-S 2000	Hot Latex	SC-2000	Shell Chemical	22.75	Extra
GR-S 2004	Hot Latex	SC-2004	Shell Chemical	26.00	Extra
GR-S 2101	Cold Latex	Copo 2101	Copolymer	28.00	Prepaid
		Pliolite 2101	Goodyear Synthetic	27.75	Prepaid
		SC-2101	Shell Chemical	22.50	Extra
GR-S 2102	Cold Latex	Copo 2102	Copolymer	31.00	Prepaid
GR-S 2104	Cold Latex	Pliolite 2104	Goodyear Synthetic	28.00	Prepaid
GR-S 2105	Cold Latex	Copo 2105	Copolymer	31.00	Prepaid
		Pliolite 2105	Goodyear Synthetic	28.00	Prepaid
X-765	Cold Latex	Copo X-765	Copolymer	29.00	Prepaid
		Pliolite X-765	Goodyear Synthetic	26.50	Prepaid
X-769	Cold Black (MB)	Philprene 1605	Phillips Chemical	19.40	Allowed

Note: * Identical with GR-S 1801 except extender is Philrich 5.

Sales Headquarters of GR-S Type Synthetic Rubber Producers

American Synthetic Rubber Corp., 370 Lexington Ave., New York 17, N. Y.
Copolymer Rubber & Chemical Corp., P. O. Box 1029, Baton Rouge 1, La.
Firestone Tire & Rubber Co., Synthetic Rubber Division, 381 West Wilbeth Rd., Akron 1, Ohio
General Latex & Chemical Corp., 666 Main St., Cambridge 39, Mass. (for Plioflex latices produced by Goodyear Synthetic Rubber Corp.)
Goodrich-Gulf Chemicals, Inc., 2060 East Ninth St., Cleveland 15, Ohio
Goodyear Synthetic Rubber Corp., 1144 Market St., Akron 16, Ohio
Naugatuck Chemical Division, U. S. Rubber Co., Naugatuck, Conn. (for polymers produced both by Naugatuck Chemical and the Texas-U. S. Chemical Co.)
Phillips Chemical Co., Rubber Chemicals Division, 318 Water St., Akron 8, Ohio
Shell Chemical Corp., Synthetic Rubber Sales Division, 30 West 50th St., New York 20, N. Y.

FORT WAYNE HOLDS SYMPOSIUM ON FAST CURING TECHNIQUES

As reported in the May, 1955, issue of RUBBER AGE, the Spring Meeting of the Fort Wayne Rubber and Plastics Group held on April 14 at the Hotel Van Orman in Fort Wayne, Ind., featured a panel discussion on "Fast Curing Techniques." Panel members for the symposium included Edward Wray (Belden Mfg.), who spoke on "Manufacture of Wire by the Continuous Vulcanization Process"; Hugh Bethell (R. T. Vanderbilt), who spoke on "Acceleration for Fast Cures," and John M. Bierer (Boston Woven Hose), who spoke on "The Rotocure Process." All of the speakers used slides to illustrate their talks.

In his talk, Mr. Wray discussed the application of the crosshead tuber to the continuous covering of wire with an insulating jacket of vulcanized rubber. He stated that speeds of application and vulcanization up to 700 feet per minute have been developed.

Mr. Bethell stated that the problem of handling rapid curing compounds can be helped by cool mills and careful attention to heat history. He described the use of vulcanization accelerators that make possible high-speed vulcanization rates without premature setting-up of the rubber material on its way through the extrusion devices. He also described the use of the Mooney raw stock viscosimeter in evaluating the scorch rates of various formulations at different temperature levels.

Mr. Bierer gave an interesting description of the Rotocure. He stated that this unit can turn out endless, jointless, continuous runs of flat products in vulcanized rubber, plastics or composite materials. Colorings and fine patterns can be embossed continuously with no disturbing joints.

Mr. Bierer described the early attempts to produce such a machine dating back to a few years after the discovery of vulcanization. The practical application, however, had to await the availability of continuous steel belts with which to maintain pressure upon the product as it goes around the curing drum.

Ottawa Introduces Polyflint

Ottawa Rubber Co., Toledo, Ohio, has introduced "Polyflint," a combination of special purpose synthetic rubber and phenolic resin, joining the hardness and strength of the phenolics and the toughness and elastomeric properties of the rubber. The result, the company states, is a hard to semi-hard material having excellent impact strength, good wearing qualities and chemical resistance. The material may be used in a wide variety of molded parts, competing with certain thermosetting plastics, machined metal parts or castings, wood, ceramics, etc.

ASRC Opens New York Office

An administrative and sales office for American Synthetic Rubber Corporation was opened on June 1 at 500 Fifth Ave., New York, N. Y. President Bancroft W. Henderson will have offices at this address. The main plant and general offices are located at Louisville, Kentucky.

Research Center Ground Broken

On May 19, in special ceremonies at Preakness, Wayne Township, N. J., ground was broken for the new research center of the U. S. Rubber Co., New York, N. Y. Approximately 400 persons attended the ground-breaking ceremonies, including company officials, U. S. Rubber laboratory personnel and community leaders. The accompanying photograph shows H. E. Humphreys, Jr., president of U. S. Rubber in the center, with Dr. S. M. Cadwell, director of research and development on the left. Dr. Harold W. Laauwe, former mayor and official representative of Wayne Township, is on the right. In an address, Mr. Humphreys explained why the new site was chosen and outlined the function of research in today's world.

Boston Group Papers Contest

The Education Committee of the Boston Rubber Group has announced a contest for original papers, authored by members of the Boston group. The winning papers will be presented at the technical session of the Spring Meeting in March, 1956. Two cash prizes in the amounts of $50.00 and $100 will be awarded for the winning papers. Judges for the contest will be John Blake, C. C. Davis and Arthur Ross. They will judge the papers on the basis of originality, organization of subject matter, general interest and quality of presentation. All members of the group, other than members of the Executive and Education Committee, are eligible for the contest. Papers must be suitable for presentation in 30 minutes and must be delivered to the Education Committee not later than December 16, 1955.

Names Northwest Representative

Rhodia, Inc., New York, N. Y., has announced the appointment of Burhans-Sharpe Co., Seattle, Wash., as sales and service representative for its line of "Alamask" industrial reodorants in the Pacific Northwest. Burhans-Sharpe specializes in chemical engineering for industry throughout Oregon, Washington, Montana, Idaho, Wyoming, Alaskan Territory and Hawaii. Its headquarters are 1743 First Avenue S., Seattle 4, Wash.

Any changes in the information submitted for the 1955-56 RUBBER RED BOOK? Notify us today!

PHILADELPHIA HEARS COLLIER ON MODERN QUALITY CONTROL

Approximately 130 members and guests attended the April 29th meeting of the Philadelphia Rubber Group held at the Poor Richard Club in Philadelphia, Penna. Principal speaker at the meeting was Simon Collier, director of quality control for the Johns-Manville Corp. Mr. Collier spoke on "Modern Quality Control." Mr. Collier supplemented his talk with the showing of a sound-color film.

The speaker observed that never in the history of American industry has the question of quality control been a more vital factor in insuring the continued success of any industry. He noted that it is essential to give better quality now than ever before if a given industry is to maintain its position with its customers.

Mr. Collier outlined some of his experiences in properly maintaining quality control. In recent years, he stated, the most important single method in the advancement of quality control has been the application of statistical principles to the control of both finished goods and processes.

While the use of statistics in this field is not new, Mr. Collier stated, it was felt at Johns-Manville that a step forward had been taken when frequency data were used in establishing specification limits for the various products manufactured by the company.

The speaker declared that during the past years, Johns-Manville has made definite strides in building up mutual confidence with its customers by reviewing with them the statistical control data that had been accumulated on products they were being furnished.

The film which Mr. Collier showed to the Philadelphia Group covered the first two basic applications of statistical quality control. The first of these covers the use of control charts for the control of processes, and the other covers the use of acceptance sampling plans for control of both production and finished products.

Berco Latex Co. Formed

A new organization, Berco Latex Co., Inc., under the management of Harold D. Berger, has been formed for the purpose of manufacturing latex compounds for the many industries using these materials. A well equipped plant and laboratory has been set up at 133 Roseland Ave. in Caldwell, N. J. Mr. Berger has had over 15 years experience as latex chemist and technical salesman with major compound suppliers in processing latex for dipping, adhesives, slush molding, can sealing, carpet backings, upholstery backings, latex thread, foam sponge, etc. Every two months, Berco Latex, as one of its services, will distribute a bulletin to latex compound users, which will attempt to supply some interesting technical and non-technical information on latex and latex-compounds. The bulletin will be an outgrowth of day to day work in the Berco laboratory, constant scrutiny of the recent literature of the field and past experience of the Berco staff. Berco Latex requests that organizations interested in receiving this bulletin, contact them in Caldwell, N. J.

Joins Willow Run Rubber

Edward H. Hindle

J. F. Koval, vice-president of Willow Run Rubber and Lining Co., Belleville, Mich., has announced the addition of Edward H. Hindle to the executive board and sales staff. Mr. Hindle is a graduate of Wayne University where he earned his degree as a mechanical engineer. He joined the U. S. Rubber Co. in 1937 and served with that firm in development, product engineering, and sales engineering until his new association with Willow Run Rubber. Active in engineering and technical groups, Mr. Hindle is a member and has been chairman of the Detroit Rubber and Plastics Group. At present, he is counselor and a member of this group's Executive Committee. He is a member of the Society of Automotive Engineers and the Engineering Society of Detroit. With Willow Run Rubber, Mr. Hindle will specialize in molded rubber parts development, production, and sales engineering. In addition, as a member of the executive board, he will take part in general policy making along with the management group.

To Mine New Sulfur Deposit

Freeport Sulphur Co., New York, N. Y., will install facilities to produce sulfur from a newly discovered salt dome deposit in the Louisiana tidelands, the company announced recently. The deposit, known as Lake Pelto, is located near its Bay Ste. Elaine mine about 60 miles southeast of New Orleans. Beneath six to eight feet of water, Lake Pelto is within a mile of the open Gulf, being separated only by a narrow island. Prospecting operations by Freeport were begun there early this year, and drilling has progressed to the point where a decision has been reached to install facilities to mine the property, according to the company's statement issued after a recent meeting of the board of directors. "This is the first of our sulfur properties which is entirely under water," the statement said. "The mining of the deposit will involve new and difficult problems not previously faced in the coastal marshlands. We have embarked upon a program of engineering and development to study these problems and to determine the best methods to follow for producing the sulfur."

Witco Opens New Offices

New executive offices of Witco Chemical Co. have been opened in the Chanin Building, 122 East 42nd St., New York, N. Y. Occurring on the company's 35th anniversary, the move reflects Witco's rapid growth by the acquirement of space more than twice as large as previously occupied. To celebrate the anniversary, and permit inspection of the new headquarters, Witco held a reception on May 18th and 19th for customers, suppliers, the press and other friends. Since 1953, Witco has expanded its manufacturing, research, and sales facilities. New plants have been opened in California, Oklahoma and England, and production facilities have been enlarged at several other of the company's plants. During the current year, Witco's Rubber Chemicals Division was created, and chemical manufacturing facilities of the Emulsol Corp. were purchased. In addition, Witco acquired a half interest in Ultra Chemical Works Inc., which operates plants in Paterson, N. J., Joliet, Ill., and Hawthorne, Calif. Presently, Witco owns and operates 15 plants and four laboratories in the United States and England. In addition, nine sales offices are maintained in seven different states, as well as two in England.

Cab-O-Sil Technical Literature

The White Pigments Division of Godfrey L. Cabot, Inc., Boston, Mass., has announced the availability of several new technical reports on "Cab-O-Sil," the company's new colloidal silica. The following publications may be secured from the company:

"Cab-O-Sil in the Rubber Industry" (CMis-1).

"Aqueous Dispersions of Cab-O-Sil" (CMis-2).

"Cab-O-Sil: General Properties, Functions and Uses" (CGen-1).

"Cab-O-Sil in Polyester-Glass Reinforced Plastics" (CPla-1).

"Cab-O-Sil—A New Colloidal Silica for Use in the Plastics Industry" (CPla-2).

"Cab-O-Sil as a Transparent Extender in Automotive Enamels" (CPai-1).

"Cab-O-Sil—A New Colloidal Silica for Use in the Paint Industry" (CPai-2).

"Cab-O-Sil as a Flatting Agent for Varnishes" (CPai-3).

National Machine Tool Show

The National Machine Tool Builders' Association has announced that there will be 166 exhibitors at the National Machine Tool Show, and 160 exhibitors at the Production Engineering Show, to be held simultaneously in Chicago, Ill., on September 6 to 17. The Machine Tool Show will be held at the International Amphitheatre, and the Production Engineering Show will be held on the Navy Pier. Exhibits at the Machine Tool Show will be confined entirely to machine tools. Meanwhile, the Production Engineering Show will display mechanisms, instruments and equipment that contribute to greater automaticity of industrial production and processing.

Perkins Joins Industrial Rayon

Ralph Perkins, Jr.

Ralph Perkins, Jr., has joined the Tire Yarn Division of the Industrial Rayon Corp., Cleveland, Ohio, as a sales representative. Mr. Perkins was formerly manager of the Plastics Division of the Owens Corning Fiberglas Division from 1948 to 1953, after which time he was president of Glaskyd, Inc., of Perrysburg, Ohio. He is a graduate of Williams College (in chemistry) and a member of the American Society for Testing Materials and the Society of the Plastics Industry.

Furniture Supply Fair

A number of rubber companies will exhibit their latest products and techniques at the National Association of Furniture Manufacturers Supply, Equipment and Fabric Fair which will be held from August 28 through September 1 in Chicago, Ill. The fair will be held in conjunction with NAFM's 27th annual convention. The F. Burkhart Manufacturing Co. will show sisal pads, latexed sisal pads, cotton batts, rubber-impregnated crimped tula pads and other upholstering fillings. Janesville Cotton Mills will exhibit pre-molded rubberized curled hair, while the Columbian Rope Co. will show latex-coated ruled coir. U. S. Rubber will exhibit its coated fabrics and General Tire will show its line of vinyl coated upholstering fabrics. Further information on the fair may be obtained from George Gayou, NAFM Supply, Equipment and Fabric Fair, Arcade Building, 812 Olive St., St. Louis 1, Mo.

Raising Titanium Dioxide Output

A construction project to increase the output of titanium dioxide pigments at the Edge Moor, Del., plant of the Pigments Department, E. I. du Pont de Nemours & Co., Inc., has been announced by the company. The project will increase by about 25% the production of "Ti-Pure" titanium dioxide pigments at the Edge Moor plant. The work is expected to be completed late next year but part of the new facilities will be in production before then. "Ti-Pure" pigments are used in the manufacture of rubber articles, paints, paper, linoleum, plastics, white leather, printing inks, printed and coated fabrics, glass, ceramics, and textile fibers.

Names in the News

JAMES H. MUNGER, formerly associated with the Victor Manufacturing and Gasket Co. of Chicago, Ill., has joined the sales engineering staff of the Automotive Rubber Co., Detroit, Mich.

A. L. JACKSON has been named director of engineering of the American Enka Corp., succeeding P. P. KRIEK, who retired on June 1. A. A. LAHNA has been named to replace Mr. Jackson as assistant director of engineering.

RAY L. BEAVERS, previously shift foreman in the Quality Control Department at the Goodyear Tire & Rubber Co., has been named manager of quality control at the Goodyear plant in Jackson, Mich.

ROLAND VOORHEES has been appointed associate director of development for the Chemicals and Plastics Divisions of the Union Carbide and Carbon Corp.

CARL E. BELLEW, associated with the U. S. Rubber Co. since 1947, has been named sales manager of molded and extruded products of the Mechanical Goods Division succeeding Purdy Miller, who has been named manager of branch sales of mechanical rubber goods.

FRANK W. TELFORD, associated with the Goodyear Tire & Rubber Co. for 44 years, the last 38 of which were spent in the Detroit manufacturers sales office, has announced his retirement.

HERBERT H. CLARKE, JR., formerly vice-president and general sales manager of the Chemical Division, Borden Co., has been named executive vice-president of the division.

WILLIAM J. STEWART has been appointed director of research and development for Nuodex Products Co., Newark, N. J. He was formerly chief of the protective coatings laboratory of the firm's Research and Development Department.

ROBERT A. CHRISTMAN has been appointed chief chemist for the new plant now being constructed by the Mobay Chemical Co. at New Martinsville, West Va. He has taken up his new duties with the Mobay research group at Anniston, Ala., until the plant is completed later this year.

HAROLD M. SONNICHSEN, director of the Technical Division of the Permacel Tape Corp., New Brunswick, N. J., has been elected a vice-president. He is also a member of the board of directors.

DR. WILLIAM J. ROBERTS, associated with the Pennsylvania Industrial Chemical Corp. since 1945, has been named director of research succeeding DR. A. L. WARD, retired. NICHOLAS C. GANGENI has been named assistant director of research succeeding Dr. Roberts.

ROGER S. FIRESTONE, president of the Firestone Plastics Co., Pottstown, Penna., has been elected to membership on the board of directors of Freedoms Foundation.

H. A. WILEY, JR., has been appointd manager of belting and packing sales for Quaker Pioneer Rubber Mills, a division of H. K. Porter Co., Inc., at San Francisco, Calif.

THEODORE S. LAWTON, sales manager, film and sheeting, for the Monsanto Chemical Co., has been named chairman of the newly-formed Vinyl Film End-Product Standards Committee of the Society of the Plastics Industry, Inc.

F. L. DAWES, president and general manager of the Adamson United Co., Akron, Ohio, has been elected to the board of directors of the United Engineering and Foundry Co., Pittsburgh, Penna.

HARRY M. ZIMMERMAN, formerly associated with the B. F. Goodrich Chemical Co., has been appointed general manager of the Plastics Division of the Seiberling Rubber Co., Newcomerstown, Ohio.

E. DUER REEVES, executive vice-president of the Esso Research and Engineering Co., has been named president of the Industrial Research Institute.

C. T. ROBERTSON, formerly a sales representative in the Philadelphia district office of the Columbia-Southern Chemical Corp., has been named assistant district sales manager of the New York office.

JAMES G. PARK, vice-president and a director of the Enjay Co., received the Memorial Award of the Chemical Market Research Association at the group's annual meeting in New York City on May 19.

DR. HERMAN SOKOL, vice-president in charge of research and development for the Heyden Chemical Corp., has been elected a director of the company.

DONALD L. O'TOOLE has been appointed special sales representative to the automotive industry by the Landers Corp. Toledo, Ohio.

RICHARD W. KIXMILLER, associated with the Celanese Corp. since 1946, has been elected vice-president in charge of the Chemical Division. He was named general manager of the division in 1952.

GEORGE M. RIVEIRE, manager of the Washington office of the Goodyear Tire & Rubber Co., has been re-elected president of the Washington Post, American Ordnance Association.

Need a personal copy of RUBBER AGE? Use the coupon on page 449.

GEORGE WASH, for the past two years manager of fertilizer sales for the Phillips Petroleum Co., has been appointed director of the newly-formed Plastics Sales Division of the Phillips Chemical Co.

THOMAS D. CABOT, president of Godfrey L. Cabot, Inc., has been elected a director of the Committee for a National Trade Policy, and a trustee of the Committee for Economic Development.

HERBERT M. KELTON, treasurer of the U. S. Rubber Co., has been elected assistant treasurer of the Controllers Institute of America, effective September 1.

ROBERT G. KENLY has been elected a vice-president of the New Jersey Zinc Co. He has been vice-president of the New Jersey Zinc Sales Co. since 1951, and will continue to supervise the activities of that unit.

HOWARD A. STOCKWELL, JR., formerly associated with Henry A. Loudon, Advertising, Inc., Boston, Mass., has been named advertising and sales promotion manager of the Tyer Rubber Co., Andover, Mass.

WILLIAM R. BIGGS, chairman of the board of the Brookings Institution, Washington, D. C., has been elected to the board of directors of the United Carbon Co., Charleston, West Va.

DR. HERMAN F. MARK, director of the Polymer Research Institute of the Polytechnic Institute of Brooklyn, was honored at special ceremonies recently on the occasion of his sixtieth birthday.

WILLIAM E. VAN HORNE, associated with the Industrial Nucleonics Corp. since 1952, has been named assistant sales manager.

V. J. FAZIO has been appointed assistant sales manager of the Industrial Products Division, Tyer Rubber Co., Andover, Mass.

Mastic Tile Purchases Wright

Mastic Tile Corp. of America, New York, N. Y., has purchased the Wright Manufacturing Co. of Houston, Texas, manufacturer of rubber tile and flexible vinyl tile flooring. The acquisition of the property, business and assets of the Wright company, which will add $12,000,000 to its annual sales volume, is said to establish Mastic Tile as the world's largest producer of resilient tile flooring and wall products, with manufacturing facilities in each of the four major trade regions in the United States. Wright will be operated as a division of Mastic Tile, under the administration of Harry C. Hachmeister, western division vice-president. The rubber and flexible vinyl tile flooring will be manufactured under the Wright trade name and distribution will continue through existing channels. Mastic tile plans early installation of production facilities at Houston for its standard line of Matico asphalt and vinyl-asbestos tile flooring, to supplement the output of its three existing plants at Long Beach, Calif.; Joliet, Ill., and Newburgh, N. Y.

Lawton Named Plant Manager

Roger H. Lawton

The appointment of Roger H. Lawton as plant manager of the Standard Machinery Co., Mystic, Conn., has been announced by the president of the firm, John R. Wheeler. For the past eight years, Mr. Lawton has been associated with the Rodney Hunt Machine Co. of Orange, Mass. From 1946 to 1951 he served as a superintendent, and since the latter date as plant manager. Before that time, Mr. Lawton was with the Federal Shipbuilding and Dry Docking Co. of Kearny, N. J. An electrical engineer, Mr. Lawton has also studied naval architecture and marine engineering, and has completed a course in management training sponsored by the American Management Association. The Standard Machinery Co., for whom Davis-Standard Sales Corp. is the sole selling agent, specializes in the manufacture of extruders for rubber and plastics, and electrical wire insulating machinery.

Hi-Bar Tractor Tire

A new rear tractor tire with many features said to be found only in "equipment level" tires has been introduced by the U. S. Rubber Co., New York, N. Y., in the competitive price field. The new tire, called the "U. S. Royal Hi-Bar," has a full lug count, spearhead bar points, and extra rubber in the crown area to give long wear with reduced vibration on hard surfaces. It derives its name from the fact that lug depth is the same as that formerly found only on equipment level tires. The lugs, with the help of the spearhead design, dig sharp and deep through the cover crop to the soil below. Front and back bracing for the lugs prevents layback and snapover. This also helps reduce excessive scuffing, and gives long, even wear. The tire has shoulder to shoulder pulling power with its wide tread. Also, the tread flatness gives more contact area than ordinary treads and helps improve traction. Sidewalls are fortified against cracks. Each bar is connected with the other, so that stresses are distributed and the danger of shoulder and sidewall cracking is reduced.

Liberian Progress Outlined

The Subcommittee on Technical Assistance Programs of the Foreign Relations Committee, U. S. Senate, recently heard testimony from Byron H. Larabee, executive vice-president of the Firestone Plantations Co., on how Liberia has progressed since Firestone launched its rubber planting program 30 years ago. Basic purpose of the hearing was to determine how Point IV works in conjunction with private industry in foreign countries. Since it started its planting program in 1925, Firestone has 85,000 acres in trees out of 212,000 acres it has under long-term lease. Mr. Larabee recounted how Firestone sponsored a survey on tropical diseases, promoted public sanitation, built schools and roads and even helped the country out of a financial crisis after the company arrived there. Firestone has trained every one of its mechanics, truck drivers, medical assistants and construction workers, as well as all its various technical and mechanical assistants, Mr. Larabee said.

The company now has 29,281 Liberians on its pay rolls, including 16,000 rubber tappers, 300 engaged in health and sanitation work, and school teachers for employees' children. The most dramatic instance, perhaps, of the accomplishments which can be fostered by a combination of financial assistance and example is the rubber plantation industry, Mr. Larabee said. For 17 years, Firestone has aided natives in planting their own rubber trees. At present, more than 650 independent Liberian rubber planters are producing for the market. During 1954, they produced 6,000,000 pounds of rubber, Mr. Larabee told the subcommittee.

Develops New Plastisol

American Resinous Chemicals Corp., Peabody, Mass., has announced a new plastisol, "Arcco C 1035," which is said to provide outstanding adhesion to metal. No primers are required to provide strong bonds to black iron, steel, galvanized metals and other metal surfaces. Standard baking temperatures of 375°F. to 400°F. are recommended. Arcco 1035 is being used for caulking side seams of galvanized sewer pipes and drainage pipes and is also of interest for drum linings and other metal coatings where excellent acid and alkali resistance and good adhesion are required. The product is available in black and clear in varying viscosities.

Hutton Retirement Announced

Wallace C. Hutton, vice-president of the Seamless Rubber Co., New Haven, Conn., has announced his retirement. He had been associated with the company since January, 1913. During his career with the company, he also served as treasurer and director. At one time, Mr. Hutton was active in the Rubber Sundries Section of the Rubber Manufacturers Association. Mr. Hutton is noted for his wide interest in civic affairs. He has been president of both the New Haven Chamber of Commerce and the New Haven Rotary Club.

Heads Container Division

Charles A. Lindsay

The appointment of Charles A. Lindsay as general manager of the Container Division of the Stauffer Chemical Co. was recently announced. Effective immediately, Mr. Lindsay will headquarter at 3211 East 26th Street, Los Angeles, Calif., and will have complete responsibility for all Container operations reporting directly to the president. The Container Division manufactures battery containers and other molded products. Mr. Lindsay has been with Stauffer for the past 12 years, most recently as production manager for Southern California. Ralph Rector will continue as director of sales and John McColgan has been appointed director of development for the division.

TreePlex Service Drop Cable

A new type of service drop cable designed especially to withstand the abrasive wear and cutting action of tree limbs has been developed by the Rome Cable Corp., Rome, N. Y. Called "TreePlex", the cable has a tight, thin (.005-inch) sheath of nylon added to its polyethylene insulation. This compound has been heat and light-stabilized for extra-long weather resistance, the company states. Laboratory tests show that this nylon sheath has increased the wear resistance of the new cable by more than 50 times, as compared with standard Triplex service drop cable. This greatly increased capacity to withstand abrasion and impact makes it possible to install TreePlex directly through heavy trees. The new cable is available in duplex, triplex and quadrex types.

Conducts Cooling Rate Tests

A series of tests have recently been completed in the laboratory of the Farrel-Birmingham Co., Inc., Ansonia, Conn. These tests were made on full-size parts simulating a Banbury mixer chamber side and covered a variety of cooling methods such as spray, bath, cored chamber, etc. The purpose of the tests was to determine the relative efficiency of different cooling methods. The results will be applied to best suit particular requirements under various operating conditions.

Financial News

Goodyear Tire & Rubber Co.

Quarter Ended March 31: Estimated net profit of $12,028,872, which is equal to $1.32 a common share, compared with $12,470,584, or $1.29 a share, in the first quarter of 1954. 1955 first quarter sales increased to a new high quarter-year record of $333,286,839, representing a gain of 22% over sales of $273,322,247 in the first quarter of 1954. The previous first quarter sales record was set in 1953 when volume totaled $303,552,336.

New Jersey Zinc Co.

Quarter Ended March 31: Net income of $1,207,813, which is equal to 62c a share, compared with $592,346, or 30c a share, in the same quarter of the preceding year. This report covers the company and subsidiaries and the net figures include $2,344 profit on sale of securities in the 1955 quarter and $622,551 in the 1954 quarter.

Minnesota Mining & Mfg. Co.

Quarter Ended March 31: Net income of $7,452,170, which is equal to 91c a share, compared with $5,259,281, or 64c a share, in the same quarter of the preceding year. Sales for the first quarter of 1955 amounted to a record high of $63,382,846, 17% above the $54,088,789 reported for the first three months of 1954.

Hewitt-Robins Inc.

Quarter Ended March 31: Net income of $253,669, which is equal to 88c a common share, compared with $207,725, or 72c a share, in the corresponding period of 1954. Net sales for the first quarter of 1955 amounted to $10,515,063, compared with $8,877,563 for the first quarter of 1954.

Seiberling Rubber Co.

Quarter Ended March 31: Net profit of $133,328, which is equal to 21c a common share, compared with a net loss of $50,907, or 26c a share, in the same period of 1954. Net sales for the 1955 quarter amounted to $10,054,459, compared with $7,550,384 in the 1954 quarter.

National Rubber Machinery Co.

Quarter Ended March 31: Net income of $147,143, which is equal to 75c a share, compared with $204,812, or $1.05 a share, in the same quarter of the previous year. Net sales for the 1955 quarter amounted to $2,837,675, compared with $3,116,658 in the like quarter a year earlier.

Brunswick-Balke-Collender Co.

Quarter Ended March 31: Net loss of $373,845, compared with a net loss of $589,076 in the same period of 1954. Net sales for the 1955 quarter totaled $5,619,841, compared with $4,789,149 in the like quarter of 1954. This report covers the company and its subsidiaries.

Circle Wire & Cable Corp.

Quarter Ended March 31: Net profit of $477,615, which is equal to 63c a share, compared with $374,187, or 50c a share, in the same quarter of 1954. Sales for the 1955 quarter amounted to $5,841,429, compared with $4,898,865 in the first quarter of 1954.

O'Sullivan Rubber Corp.

Quarter Ended March 31: Net income of $31,678, which is equal to 6c a common share, compared with $27,243, or 5c a share, in the same quarter of 1954. Net sales for the 1955 quarter amounted to $1,731,000, compared with $1,474,000 in the first quarter of 1954.

Electric Auto-Lite Co.

Quarter Ended March 31: Net income of $3,274,054, which is equal to $2.05 a share, compared with $397,985, or 25c a share, in the corresponding period of 1954. Consolidated net sales amounted to $80,542,482, compared with $49,481,448 a year earlier.

Raybestos-Manhattan, Inc.

Quarter Ended March 31: Net profit of $1,006,833, which is equal to $1.60 a share, compared with $786,412, or $1.25 a share, in the like quarter of the previous year. This report covers the company and domestic subsidiaries.

Thiokol Chemical Corp.

Quarter Ended March 31: Net income of $115,000, compared with $52,830 in the same period of 1954. The net income for the 1955 quarter includes a non-recurring $21,000 dividend from Kentucky Synthetic Rubber Corp.

Mansfield Tire & Rubber Co.

Quarter Ended March 31: Net income of $534,610, which is equal to 97c a common share. First quarter sales totaled $18,416,794, a record high for the company and 72.9% above the sales of the same period in 1954.

Rome Cable Co.

Year to March 31: Net income of $930,879, which is equal to $1.81 a share, compared with $1,637,787, or $3.27 a share, in the prevous year.

Cooper Tire & Rubber Co.

Quarter Ended March 31: Net income of $57,088, which is equal to 36c a share, compared with $70,592, or 45c a share, in the first period of 1954.

U. S. Rubber Reclaiming Co.

Quarter Ended March 31: Net profit of $60,573, compared with a net loss of $57,232 in the same quarter of 1954.

Lee Rubber & Tire Corp.

Six Months to April 30: Net profit of $657,100, which is equal to 78c a share, compared with $633,710, or 75c a share, in the same period of the preceding year. Net sales for the six months ended April 30, 1955, amounted to $19,819,617, compared with $17,428,467 in the previous year. This report covers the company and its domestic subsidiary.

A. G. Spalding & Bros., Inc.

Six Months to April 30: Estimated consolidated net income of $320,000, which is equal to 59c a share, compared with $200,000, or 37c a share, in the same period of the previous year.

Anaconda Wire & Cable Co.

Quarter Ended March 31: Net profit of $1,259,541, which is equal to $1.49 a share, compared with $1,256,853, which was also equal to $1.49 a share, in the same quarter of the preceding year.

Belden Manufacturing Co.

Quarter Ended March 31: Net income of $286,246, which is equal to 89c a share, compared with $343,132, or $1.07 a share, in the first quarter of 1954.

Servus Rubber Co.

Year to February 28: Net income of $105,176, which is equal to 27c a common share, compared with $66,077, or 17c a common share, in the preceding year.

Enjay Butyl Availability

Enjay Co., Inc., 15 West 51st St., New York 19, N. Y., has announced the availability of grades of Butyl rubber comparable to those produced in government-owned plants prior to their sale to private interests. Enjay is the marketing agent for the Esso Standard Oil Co., and the Humble Oil and Refining Co. There follows below a listing of the Enjay Butyl rubbers and the corresponding government designation.

Regular Grades	*Formerly*
Enjay Butyl 035	GR-I-35
150	GR-I-50
150 CC	GR-I-50 CC
215	GR-I-15
215 CC	GR-I-15 CC
217	GR-I-17
217 CC	GR-I-17 CC
218	GR-I-18
218 CC	GR-I-18 CC
325	GR-I-25

In addition to the grades listed above, Enjay is also marketing Enjay Butyl 165, a non-staining grade of GR-I-50 CC; Enjay Butyl 268 CC, a non-staining grade of GR-I-18 CC, and Enjay Butyl 365 CC, a non-staining grade of GR-I-25 CC. It is to be noted that "CC" following a given polymer indicates that it is packed in a coated carton without film wrap. All grades of Butyl are normally packaged in an uncoated carton with the polymer wrapped in a plastic film. Enjay has established a price of 23c a pound, f.o.b., producing plants, for regular grades, and 24c a pound for non-staining grades.

Named Research Institute Director

Dr. C. A. Stokes

Dr. C. A. Stokes, director of research and development for Godfrey L. Cabot, Inc., Boston, Mass., has been elected to the board of directors of the Industrial Research Institute. He will serve a term of three years. Dr. Stokes has been Cabot representative to the Institute since 1949, and a member of the committee on the selection, education, rating and training of technical personnel. He has been Cabot research and development director since 1945, and is a vice-president and director of Petrocarb Equipment, Inc., New York City engineering and construction concern. He is a member of the American Institute of Chemical Engineers, American Chemical Society, American Institute of Mining and Metallurgical Engineers and the Research Directors Association.

Expanding Resin Production

Schenectady Resins, Division of Schenectady Varnish Co., Schenectady, N. Y., has expanded and modernized its facilities for terpene resin production. The additional equipment and plant space gives the company a complete line of terpene resins from pourable oils at 10°C. melt point to hard resins at 125°C. The new Schenectady installation will also mean new standards of color and uniformity. These straight hydrocarbon resins are being used as tackifiers in adhesives, in all kinds of pressure-sensitive tapes, in the manufacture of vehicles for permanent leafing aluminum paints, and as rubber processing aids.

Firestone Lauded by Chamber

Firestone Tire & Rubber Co. won the plaudits of the Chamber of Commerce of the United States at a banquet on May 4 in Washington, D. C., closing the organization's 43rd annual convention. The firm was honored for its "outstanding record in representing American business to the general public and in appreciation of its rich contribution to the culture of America through the 'Voice of Firestone' radio and television broadcasts." Harvey S. Firestone, Jr., chairman, received a scroll honoring the company from Clement D. Johnson, the Chamber's retiring president.

New Sponge Vinyl Plastisols

A new series of sponge vinyl plastisols has been introduced by the Watson-Standard Co., Pittsburgh, Penna. These special plastisols containing chemical blowing agents are shipped as pourable liquids. When subjected to heat from 300° to 400°F. for three to thirty minutes, these compounds produce a uniform vinyl sponge, the company states. Temperature and time required for fusion depend upon size and mass of the object and the cross-section of the sponge. The expansion rate can be controlled by the compounder to provide plastisols which will expand 100% to 600% and provide densities from eight to thirty pounds per cubic foot. Versatile in methods of application, these new compounds may be spread coated, sprayed, molded, dipped or cast. When used in combination with vinyl plastisol skins, the fabricator may produce in a single operation many items which with previous methods required fabrication from several integral parts. Watson-Standard states that the vinyl sponge produced by these compounds is tough, flexible, non-shrinking, and resistant to oxidation, oils, greases, and most acids, alkalies and solvents. They may be also flame resistant and flexible at low temperatures. The cured vinyl sponge exhibits good sound deadening properties as well as insulation against heat or cold. These compounds are available in a wide range of colors to suit customer requirements.

Shell Sales Appointments

Four salesmen were recently appointed to the Synthetic Rubber Sales Division of Shell Chemical Corp., New York, N. Y. The salesmen will report to J. E. Toevs, recently appointed sales manager of the Division. They are A. D. Abshire and H. C. Findlay, both of Los Angeles; J. R. Brady, Jr., formerly of Newark, N. J.; and D. P. O'Connell, formerly of the head office trade analysis section in New York. Headquarters for the Sales Division is 19253 South Vermont Avenue, Torrance, Calif. Other appointments announced by the company were B. O. Blackburn of the company's Union, N. J., laboratory, on temporary assignment to the Sales Development Department; G. W. O'Bryan, formerly of marketing, administrative office, as supervisor, operations; H. G. Lauritzen, of the San Francisco Ammonia Division, as accounting supervisor.

Receives Safety Award

A first place award for working 600,603 man-hours without a lost-time accident during a period of one year has been presented to the Research and Development Department of the U. S. Rubber Co., by the National Safety Council. It was the eighth award of its kind to be won by the company's general laboratories since 1932. Man-hours worked without a lost-time accident during the eight years the awards were won, total 3,078,505. The general laboratories also placed third in U. S. Rubber's inter-plant safety contest recently, and received an award from H. E. Humphreys Jr., president.

Elected Tyer Rubber President

Wallace E. Brimer

Wallace E. Brimer has been elected president and treasurer of the Tyer Rubber Co. of Andover, Mass. Mr. Brimer has been treasurer of the company for twenty-one years and has served as general manager since 1944. As president, Mr. Brimer succeeds Hugh Bullock, who had held that post since 1935. Mr. Bullock, who recently announced his retirement, had been associated with Tyer Rubber for twenty-nine years. He remains a director of the company. Mr. Bullock is also a director of the Rubber Manufacturers Association.

To Introduce New Roof Coating

Gates Engineering Co., Wilmington, Del., one of the leading producers of neoprene protective coatings in both liquid and cold-bond form, will soon introduce "Gaco Roof," a liquid neoprene product which the company predicts will revolutionize the roof repair and maintenance field. For the first time, the company states, there will be available a roof coating which bonds and seals shingles and slate with a windproof and waterproof coating. Among the company's present products is "Gaco 700," a liquid neoprene which has proved invaluable in numerous industrial, commercial and military applications because of its resistance to acids, fumes and splash, and its other unique properties. In addition to neoprene coatings, the company also supplies a broad range of vinyl coatings and linings, as well as other coatings, primers and putties. Gates Engineering also produces rubber-lined pipe joints and rubber-lined equipment.

Stowe-Woodward Opens Plant

More than 600 guests attended the May 4 opening of the new rubber roll plant constructed at Griffin, Ga., by the Stowe-Woodward Co., Inc., Newton Upper Falls, Mass. Put into production early this year and now in full-scale operation, this new plant marks the second major expansion of the company within a year. Last June, the company dedicated its Neenah, Wisc., plant. The new plant is said to be the most modern roll covering plant in the world.

Loucks Joins Thiokol Chemical

Earl W. Loucks

Earl W. Loucks has joined the technical sales staff of the Thiokol Chemical Corp., Trenton, N. J., and is now engaged in the sale of polysulfide liquid polymers, plasticizers, and oil- and solvent-resistant synthetic rubber. Mr. Loucks was formerly office manager of the sales department of the New York Eastern District Sales Office, Koppers Co., Inc. He has a B.S. degree in chemistry from Franklin and Marshall College and a B.S. in chemical engineering from the Rolla School of Mines at the University of Missouri.

Occupies New West Coast Plant

Taylor Instrument Companies, Rochester, N. Y., has announced that on May 1, 1955, its San Francisco, Calif., offices and plant were moved across San Francisco Bay to 1661 Timothy Drive, San Leandro, Calif. Decision to relocate the plant and sales offices was made on the basis of a greatly increased volume of sales and service activities in the San Francisco area. The new plant has much better facilities and equipment than have previously been available in the San Francisco area, a company spokesman said. He stressed that it is capable of duplicating many manufacturing and repair techniques followed in the company's main plant in Rochester. Set up to make repairs and assemble new instruments, it contains 16,800 square feet of floor space, a substantial gain over the quarters formerly occupied, has extensive parking facilities, and is centrally located.

Plyocrete Neoprene Emulsion

United Laboratories, Inc., Cleveland, Ohio, has announced a new product, "Plyocrete," a neoprene rubber emulsion which works into a plastic reforming material. It is said to be especially adaptable to the repair of cracks, joints and worn spots in swimming pools, masonry side walls, copings, stadium, bridge and other masonry construction. Shipped dry, it mixes into a plastic in minutes, the company states, and dries in an hour. Easy to apply, the product is available in colors.

U.S.I. Isosebacic Acid

U. S. Industrial Chemicals Co., a division of National Distillers Products Corp., New York, N. Y., has announced the development of a new synthetic organic chemical for industry, "U.S.I. Isosebacic" acid. The new product is said to show considerable promise as a raw material for the production of vinyl resin plasticizers with excellent low volatility, non-migration and low temperature characteristics. Other promising applications include: the production of polyamides (nylon) type; molding and extrusion plastics and adhesives; alkyd resin manufacture; the synthesis of ester lubricants of the type used in jet propelled aircraft; the production of polyester resins used in the manufacture of glass reinforced plastics; the synthesis of polyurethane resins for foamed plastics, synthetic rubber and protective coatings. U.S.I. Isosebacic acid is a mixture of sebacic acid in approximately the following proportions: 72-78% α-ethyl suberic acid; 12-18% α-α'diethyl adipic acid, and 6-10% sebacic acid. The tentative specifications for the material as announced by the company state that the product has a molecular weight of 202.24; combining weight of 101.12; C-10 dicarboxylic acid content, 98.5% minimum; volatile acids, as acetic acid, 300 p.p.m. maximum; moisture, 0.3% maximum; ash, 0.1% maximum; iron, 3 p.p.m. maximum, iodine number, 1.0 maximum; color, A.P.H.A. (20g. in 100 ml methanol), 60 maximum; melting range, 68-74°C., and density (80°C.), 1.025 g/ml (8.55 pounds/gal.).

Special Post for Bellows

Howard A. Bellows, vice-president of the General Tire & Rubber Co., Akron, Ohio, has assumed new duties in sales development, president William O'Neil announced recently. Mr. Bellows' new responsibilities will first involve a special assignment in the radio and television operations of General Teleradio and the Mutual Broadcasting System, Mr. O'Neil said. General Teleradio is a subsidiary of General Tire. In this post, Mr. Bellows will continue to make his headquarters in Akron and will report directly to the president. With the Akron company for 30 years, Mr. Bellows has been in replacement tire sales. Four years ago he came to Akron from New York where he was eastern district sales manager. Later he was placed in charge of all replacement tire sales and was elected a vice-president in 1952.

C. K. Williams Elects Directors

C. K. Williams & Co., East St. Louis, Ill., has announced the election of four new directors: R. A. Stephens, director of research; E. H. Green, general sales manager; J. S. Googins, general production manager, and W. N. Crumpler, western division sales manager. The following officers, who constitute the balance of the board, were elected at the directors' meeting: M. B. Williams, chairman of the board and treasurer; L. K. Ayers, president; J. W. Ayers, vice-president; R. W. Dodson, vice-president; J. W. Schlosser, vice-president, and E. G. Davies, secretary.

Appointed to Technical Service

Paul H. Wilhelm

United Carbon Co., Inc., Charleston, West Va., has announced the appointment of Paul H. Wilhelm as technical service representative, with headquarters at their New York office, Room 2612, Empire State Building. Mr. Wilhelm will assist in customer service on technical problems on accounts located in New York and New England areas. Mr. Wilhelm has been with United Carbon since 1937. Prior to his present appointment, he concentrated his efforts on product development and quality control at the plants, serving as plant manager of two of United's larger furnace black plants.

Announces New Appointments

Five new appointments have just been announced by L. C. Boos, vice-president and general manager of the International Division of U. S. Rubber Co. The appointments are effective at once. E. J. Dailey, former director of European operations, has been named director of operations, Eastern hemisphere; A. E. Denari, former director of South American operations, becomes director of operations, Western hemisphere; and E. J. Higgins, who was director of head office operations, is now director of staff operations. D. E. Durst has been appointed manager of overseas manufacturing; and R. H. Swanson, formerly assistant industrial relations manager for the division, has been named industrial relations manager.

Opens Venezuelan Plant

Firestone Tire & Rubber Co., Akron, Ohio, recently opened its new plant at Valencia, Venezuela, following special dedication ceremonies attended by Harvey S. Firestone, Jr., board chairman, and Venezuelan President Perez Jimenez. The plant contains 100,000 square feet of floor space and contains advanced machinery and equipment for the production of 150,000 tires annually. The corporate operator of the new plant will be Companima Anonima Firestone Venezolana. The plant is Firestone's third in South America, others being at Buenos Aires, Argentina, and Sao Paulo, Brazil.

Ahlefeld Promotion Announced

E. H. Ahlefeld, Jr.

Farrel-Birmingham Co., Inc., Ansonia, Conn., has announced the appointment of Edwin H. Ahlefeld, Jr., to the position of assistant general sales manager under Donald A. Comes, vice-president and general sales manager. Mr. Ahlefeld joined Farrel-Birmingham in 1945 following four and one-half years of service in the U. S. Navy. He was a special sales representative connected with the Farrel Buffalo, N. Y. plant until 1947 when he was transferred to company headquarters at Ansonia. In 1950, he was named manager of the Banbury Mixer Sales Division, the position he held until this present appointment. Mr. Ahlefeld graduated from R.P.I. in 1938 with an engineering degree. He also attended N.Y.U. for post graduate study in business administration.

Electrical Contacts Abstracts

The American Society for Testing Materials, 1916 Race St., Philadelphia 3, Penna., has announced publication of a new supplement to the 1952 edition of "Bibliography and Abstracts on Electrical Contacts" (ASTM STP No. 56-G). This new supplement is the first with respect to the 1952 edition, and it includes all new references collected up to January 1, 1954. The subject index, although short, is comprehensive and self-explanatory. There is also an author index and references themselves are listed in numerical order with a separate section giving replacements and new references for the 1934 to 1950 period. The 225-page book is available in paper cover at $5.50, and the current supplement at $1.00 from ASTM.

Vinyl Film Fashion Show

June 22 has been announced as the date of the first industry-wide vinyl film fashion show and exhibit by the Society of the Plastics Industry, Inc. The show will be held in the grand ballroom of the Hotel Pierre starting at 1:00 P.M. It will be preceded by a reception for the press and leading retailers, fabricators and processors. The fashion show will be followed by a panel of distinguished speakers from the fashion, design, merchandising and other allied fields.

Building Polyvinyl Alcohol Plant

American Aniline & Extract Co., Inc., Philadelphia, Penna., has announced that it has purchased acreage adjacent to the Air Reduction plants at Calvert City, Ky., for the construction of a polyvinyl alcohol plant. American Aniline will receive the basic material, vinyl acetate monomer, by pipeline from the Air Reduction Chemical Co. plant now being built. The Air Reduction monomer plant, to be completed in the first part of 1956, will produce 30,000,000 pounds annually and will receive acetylene, an important basic material in the manufacture of vinyl acetate monomer, by pipeline from Airco's National Carbide calcium carbide acetylene generating plant, also located at Calvert City.

Other plants at Calvert City now receiving pipeline acetylene from National Carbide are the acrylonitrile and vinyl chloride plants of the B. F. Goodrich Chemical Co. General Aniline & Film Corp. is constructing a new plant to produce a wide variety of products from acetylene, also to be pipelined from the Calvert City National Carbide plant. The American Aniline & Extract Co. plant will be completed late this year. The polyvinyl alcohols to be produced at this plant will be an important segment of American Aniline's products for the textile, paper and paint trades. Marketed under their trade name of "Orthosize," they will be companion products to the Orthocryls, which are polymers of acrylic acid.

General Electric Promotes Coe

Jerome T. Coe has been appointed sales manager for the General Electric Co.'s Silicone Products Department. A native of Madison, Wisc., Mr. Coe joined General Electric there in 1942 as a chemical engineer in the company's Research Laboratory. In 1946, he transferred to the Chemical Division. Since 1947, he has been at the silicone plant in Waterford, N. Y., where in 1952, he was appointed manager—sales development. This position preceded his present appointment. Mr. Coe was graduated from M.I.T. in 1942 with a B.S. degree in chemical engineering. During World War II, he was a Lt. (j.g.) in the U. S. Navy. He is a member of the American Institute of Chemical Engineers, the American Chemical Society, and the Commercial Chemical Development Association. Mr. Coe's headquarters will continue to be at Waterford.

Ansul Offers Neoprene Solvent

Ansul Chemical Co., Marinette, Wisc., reports that a new polyglycol ether, known as "Ansul Ether 181," has been tested successfully as a solvent to remove neoprene compounds quickly and efficiently. The new ether was found to be 100% effective in removing neoprene compounds from aircraft Radomes in less than two hours. Radomes are the plexiglass shrouds placed in strategic parts of a plane to cover radar equipment; customarily covered with neoprene compounds for protection against scratches and other damage before the plane is delivered. Engineers of the company say Ether 181 has a high flash point and a very low toxicity factor.

Appointed Sales Manager

Samuel Sneath

Samuel Sneath, formerly associated with the Barr Rubber Products Co., Sandusky, Ohio, has been appointed sales manager of the Martin Rubber Co., Long Branch, N. J. Mr. Sneath will not only cover the sporting goods and toy trades but will be in charge of sales for all staple merchandise manufactured by the company.

Installs Plane Tire Test Wheel

The installation of an airplane tire test wheel, said to be the only civilian wheel of this type in the country, at the West Haven, Conn., plant of the Armstrong Rubber Co., has been announced by President Frederick Machlin. According to Mr. Machlin, "the new test wheel, housed in a specially created building at the West Haven plant, will perform the rigid testing required for airplane tires. The only other test wheel of this type in the country is installed at Wright Field, making Armstrong the only tire company with equipment for testing airplane tires in such a manner. In addition, Armstrong has recently constructed a new building to hold the extra large tire building and curing equipment necessary to aid in the development of airplane tires." The new airplane test wheel, which weighs approximately forty tons and measures ten feet in diameter, simulates airplane landings beginning with the touchdown speed of 250 miles per hour and decelerating to a full stop in the required time. Although at the present time no airplane makes a landing at such a high speed, the jet-propelled airplanes of the future will require tires to withstand these high speed landings.

Croysdale Joins Hewitt-Robins

Robert T. Croysdale, formerly general foreman of the Molded Goods Division of the B. F. Goodrich Co., has been named factory manager of the Fremont, Ohio, plant of Hewitt-Robins Inc. A graduate of Miami University in 1941, he served three years in the Navy during World War II. He also attended the U. S. Naval Academy and Akron Law School. The Fremont plant manufactures foam rubber, flooring items such as rubber and vinyl tile, carpet underlay and stair treads.

Los Angeles News

The Goodyear Tire & Rubber Co. of California sponsored the May 3 meeting of the Los Angeles Rubber Group held at the Statler Hotel in Los Angeles, Calif. The technical portion of the meeting was addressed by Kathleen S. Rostler, editor of the Rubber Formulary, Bakersfield, Calif. Mrs. Rostler spoke on "Filing Compounding Information and Finding It."

In her paper, Mrs. Rostler discussed the advantages and disadvantages of various methods of recording compounding data published in the literature, as well as that obtained in one's own laboratory. The speaker showed how filing information and finding it can be simplified by the use of marginally punched cards.

The non-technical portion of the meeting was attended by about 310 persons and guests. The program included entertainment by Louise O'Brien, songstress, and Johnny Carson, comedian. In addition, there was a drawing for door prizes.

R. D. Abbott Co., Inc., has announced the opening of an office in the San Francisco Bay area with Fred W. Swain as sales manager. The new office will be located at 20 Bonnie Lane, Berkeley 8, Calif. Plans are now being formulated for a warehouse in the Bay area. Mr. Swain had been associated with the Pioneer Rubber Mills of Pittsburgh, and San Francisco, Calif., for many years. He started as a bookkeeper with the company and served in many capacities as paymaster, planning engineer, plant superintendent and, until his retirement in August, 1954, vice-president.

The Los Angeles Rubber Group held a golf outing on May 13 at the Bel-Air Country Club. Winners of the various events included: *Low Net,* Don Nyman (Sili-Craft); *Low Gross,* Al Pickard (Braun Corp.); *Blind Bogey,* Fred Cota (Goodyear); *2nd Low Net,* Wendell Higbee (Southwestern Rubber); *High Gross,* Austin Herbst (Minnesota Mining); *Closest-to-the-Hole on No. 5,* N. I. White (Brunning Corp.); *Closest-to-the-Hole on No. 6,* J. G. McDonald; *Longest Putt on No. 18,* Max MacDonald (Midwest Rubber Reclaiming).

Pennsylvania Industrial Chemical Corp., has opened a new West Coast district sales office at 3460 Wilshire Blvd., Los Angeles 5, Calif. The telephone number of the new office is DUnkirk 7-5201.

Phil Grimes of California Testing Laboratories has announced the acquisition of the California Electronic Services Co. California Electronic will operate as a wholly-owned subsidiary of California Testing. Mr. Grimes has been named vice-president of the new company.

TLARGI Rubber Technology Foundation is in need of copies of the *India Rubber Journal* (London), Volumes 120 through 124, covering all of 1951 through June, 1954. TLARGI is willing to purchase these volumes, if they are available.

Witco Chemical Co. has moved its Los Angeles office to 3460 Wilshire Blvd., Los Angeles 5. The new telephone number is DUnkirk 9-1211.

Arthur R. Plank is now associated with the Fargo Rubber Co., Los Angeles, Calif.

Donald L. Raworth, formerly with the Downey, Calif., office of the Harshaw Scientific Co., has been moved to the San Francisco area to represent the firm.

G. W. Van Cleve has been appointed vice-president and general manager of Allied Scientific Products Co., Culver City, Calif. He will also continue as sales manager of the Stillman Rubber Co., also of Culver City.

Construction has been started at Monrovia, Calif., on a new 8,000 square foot plant for the Atlas Sponge Rubber Co.

New Super Eagle Bicycle Tire

A new bicycle tire of premium quality, which is said to combine sturdiness and comfortable ride with ease of operation, has been announced by the Goodyear Tire & Rubber Co., Akron, Ohio. Manufactured especially for the latest deluxe American bikes and designed to fit all balloon tire rims, this tire is known as the "New Super Eagle 1.75." Its outstanding feature is a streamlined cross-section, half way between the regular balloon tire (2.125) and the lightweight (1.375) cross section. According to the company, this assures the comfort of a cushioned ride, yet retains the advantages of a lightweight tire's minimum rolling resistance and easy operation.

The New Super Eagle 1.75 is introduced as a companion unit to the company's popularly-priced Wingfoot tire of same cross-section (1.75). This new tire, however, was developed for cyclists who demand the finest, including still greater durability and longer wear, now offered by this premium product. The New Super Eagle, it is pointed out, is manufactured with improved rubber compounds and special fabric treatment—the same as the company's lightweight tires. This results in low rolling resistance — synonymous with long coasting and easy pedalling. The new tire also has the well-known Goodyear diamond tread pattern with its greater safety contour, so that the tire hugs the road and gives maximum traction. Available either in white or black sidewalls, the tire is made in two sizes—24 by 1.75 and 26 by 1.75.

Another copy of RUBBER AGE needed in your office? Use the coupon on page 449.

Named Restfoam Division Manager

Ellis B. Gardner

Ellis B. Gardner, vice-president of Hewitt-Robins, Inc., Stamford, Conn., has been appointed general manager of the Restfoam Division, succeeding R. A. Nilsen, who recently resigned. Mr. Gardner was also elected a director of the company. The Restfoam Division produces foam rubber products in plant at Buffalo, N. Y., Fremont, Ohio, and Staten Island, N. Y. It also produces rubber and plastic flooring products at the Fremont plant. Mr. Gardner started with the Restfoam plant in Buffalo in 1946, later becoming division controller. In 1954, he was elected vice-president and treasurer of the company. Concurrent with Mr. Gardner's promotion, Herman A. Schaefer, secretary of the company, was given the additional responsibility of treasurer. Austin Franklin, previously assistant controller, was named controller.

Mr. Gardner, a native of Little Rock, Ark., is a graduate of Columbia University. He was associated with the General Electric Co. in Schenectady, N. Y., for five years and served in the U. S. Army Air Force for two years before joining Hewitt-Robins. During the period when the American Synthetic Rubber Corp. was formed for the purpose of bidding on the government-owned GR-S plant at Louisville, Ky., Mr. Gardner served in close association with Thomas Robins, Jr., president of Hewitt-Robins, in organizing the firm. During this time, he served as vice-president of American Synthetic Rubber. Mr. Gardner is a member of the Rubber Industry Advisory Committee and an alternate of the U. S. State Department's Rubber Advisory Panel. He is also a member of the Machinery and Allied Products Institute and a trustee of the Pension Trust of the RMA.

Mr. Schaefer has been secretary of the company since 1953. A graduate of the University of Pennsylvania, he received a B.S. degree in economics from the University's Wharton School of Finance and Commerce in 1943. Following a term of service in the U. S. Navy, he received his L.L.B. degree from the University's Law School in 1948. He joined Hewitt-Robins in 1952. Mr. Franklin joined the company in 1946 after broad experience in industry and two years service in the U. S. Army.

Smith Elected Vice-President

Frank J. Smith

Frank J. Smith, who has been manager of the Petrochemical Division of the American Oil Co., New York, N. Y., has been elected vice-president and general sales manager and a director and member of the Executive Committee of the newly formed subsidiary, Pan American Chemicals Corp. Pan American Chemicals Corp. will market petrochemicals manufactured at the Texas City plant of American Oil. Mr. Smith will continue to make his headquarters in New York. A graduate of the University of Illinois as a chemical engineer, Mr. Smith joined the company as assistant director of research at Texas City in 1942. He came to New York in 1947 as head of the Chemicals Division.

Petro-Tex Chemical Formed

Formation of the Petro-Tex Chemical Corp. of Houston, Texas, was announced on May 20 by Paul L. Davies, president of the Food Machinery & Chemical Corp., and Gardner Symonds, president of the Tennessee Gas Transmission Co. The new firm, owned jointly by the two companies, will operate the 90,000 ton butadiene facility at Houston recently purchased by Food Machinery from the government. Mr. Symonds will be chairman of the board of the new concern, with Mr. Davies as president and chief executive officer. Joseph R. Mares, formerly vice-president of the Monsanto Chemical Co., will be managing director of the new company. Petro-Tex Chemical has announced a five-year, $6,500,000 research program to find new uses for butadiene. The plan involves the expenditure of $1,500,000 for a new research laboratory and the expenditure of $1,000,000 annually for experimental work.

Dunlop Spanish Plant Likely

According to recent reports, Dunlop Rubber Co., London, England, may soon conclude an agreement with Spanish interests for the construction of a tire plant in Spain. A license to manufacture is currently held by Sociedad Iberica de Gomas y Amiantos, S.A. of Bilbao, but it is understood that a new company would be formed in which Dunlop, as a foreign investor, would hold a minority share interest as permitted by Spanish law.

Kenney Gets Foreign Post

The appointment of Robert P. Kenney as European director of chemical activities for the B. F. Goodrich Co. has been announced by John R. Hoover, president of B. F. Goodrich Chemical Co. Mr. Hoover cites the company's broadening chemical interests in both this country and Europe as the reason for the creation of the new position of resident director to represent both the chemical company and the B. F. Goodrich Research Center. Mr. Kenney's activities will include technical liaison with European chemical manufacturers and academic research laboratories, handling of licensing agreements, and other special assignments. Prior to his new assignment, Mr. Kenney was manager of the General Chemicals Sales Department. He joined the company in 1944 as manager of international service after three years in Washington as chief of the vinyl resins unit of the War Production Board. In 1945 he became the first manager of the company's International Sales Department. He was appointed manager of general chemical sales in 1949. In 1951, Mr. Kenney was loaned to the National Production Authority for a short time to assist in the establishment of plastic materials controls and distribution. A graduate of Dartmouth College, Mr. Kenney is a member of the American Chemical Society, the Chemists' Club of New York and the Commercial Chemical Development Association.

Harwick Opens Southern Office

The opening of a new office and warehouse in Albertville, Ala., has been announced by the Harwick Standard Chemical Co., Akron, Ohio. This new office will serve the territory of Tennessee, Alabama, Mississippi, Western Georgia and Louisiana. The office will be under the management of Albert Koper, who has been technical sales representative operating from the Akron office. The new office and warehouse provides the company with a service link into an area that is constantly growing industrially. "Mr. Koper's training as a chemist and experience in general rubber laboratory work, engineering and production, will give the south-central states ready access to valuable assistance on compounding and production problems," said Jack R. Moore, president of Harwick Standard.

Announces Detero Wax Beads

American Maintenance Supply Co., 236 West North Avenue, Chicago 10, Ill., has announced plans to patent the process of forming beads from wax blends and special formulas. The use of beads obviously promotes more uniform dispersal and facilitates handling. The processer states that the beads will not gum or stick together in hot weather or hot mill rooms. Beads have been used for a number of years with stearates and similar products and have advantages over other forms in measuring, handling and a more uniform product—and the new wax beads, called "Detero Wax Beads," are now being economically produced by a process which is said to be a new approach to the beading problem.

Sunderland Joins Sam'l Bingham

John E. Sunderland

John E. Sunderland has been appointed vice-president in charge of manufacturing, engineering and personnel for Sam'l Bingham's Son Manufacturing Co., Chicago, Ill. Previously, he had been manufacturing superintendent on molded and extruded rubber goods for the Standard Products Co.; in charge of development and engineering at Tyer Rubber Co., and on the development engineering staff at Goodyear. Mr. Sunderland will be in the main factory in Chicago where his experience in the latest production methods will be a valuable asset in the Bingham company's modernization program.

3M Dedicates Research Center

The new Research Center of the Minnesota Mining and Manufacturing Co. was dedicated on May 12 in St. Paul, Minn. The dedication program, featuring new products and processes developed through research, was held in the Research Center laboratory building, first unit to be completed at the new center. Featured at the dedication was the world's first cross-country transmission of color television on magnetic video recording tape. The dedication ceremonies honored William L. McKnight, 3M board chairman; Archibald G. Bush, chairman of the executive committee; and the late Richard P. Carlton, former president, as the three men who contributed most to the company's growth through their fostering of research and product development.

Rubber Rolls Handbook

"Rubber Rolls," said to be the first industrial handbook devoted exclusively to the subject, has been published by the Rodney Hunt Machine Co., Orange, Mass. The company states that it answers the need for a comprehensive, authoritative treatise on rubber rolls, not heretofore available. The 60-page handbook is available free to roll users on request to the company. Copies of the handbook are available to others for $2.00 each.

Any changes in the information submitted for the 1955-56 RUBBER RED BOOK? Notify us today!

Canadian News

The Exchequer Court of Canada has ruled that such retail outlets as the T. Eaton Co., Ltd., do not have to pay sales and excise taxes on special brand tires. In a judgment by court president Justice J. T. Thorson, it rejected the appeal of three national tire manufacturers — Goodyear, Goodrich and Firestone—which sought to have the government declare Eaton's and similar companies manufacturers for the purpose of taxation. This would have increased the tax payable on special brand tires which compete for the market against those produced by Goodrich, Goodyear and Firestone.

In all of these cases the Government levies the 10% sales tax and the 10% excise tax on the suppliers' selling price. In the case of Eaton, this is the selling price of Dominion Tire.

Senator Salter Hayden of Toronto, counsel for Goodyear, Goodrich and Firestone, had argued first before the Tariff Board and later before the Exchequer Court that the Eaton company should be billed as the manufacturer, since it owned the trademarks used on the special brand tires and since it asserted a "sales right" to the tires in advertisements.

The Tariff Board had ruled against him and Justice Thorson upheld the board. He said that just because the Eaton company owned the trade-marks, it does not necessarily follow that it has proprietary rights on the goods on which the trade marks appear. Owner of trade marks had legal protection against the illegal use of those marks but not on the goods on which the marks appeared.

As for the advertisements, he could find no evidence that they showed that Eaton's claimed a sales right to the tires while they were being manufactured. Evidence had been that the Dominion Tire Co. owned all the dies and molds and took all the risk in producing the tires. Justice Thorson said he therefore could not see how Senator Hayden could claim that the tariff board had "erred in law" in finding in favor of the Eaton Company. The appeal was dismissed.

Dalex Company, Ltd., has been named Canadian representative for Whittaker, Clark and Daniels, Inc., New York, N. Y., for the distribution of the Whittaker line of minerals, colors, and pigments in Canada. With sales offices and warehouses located in both Montreal and Toronto, Whittaker is now distributing such products as "399 Magnesium Silicate," "Hydro Magna Paste," and magnesium oxide from these points, as well as Thomasset Colors. It is expected that the new Canadian agent's extensive warehouse facilities will be adequate to carry stocks of many Whittaker products in the future.

By virtue of this new relationship between Dalex and Whittaker, Dalex will also be representing Canadian Talc Industries, Ltd., Madoc, Ont., and will distribute this company's products throughout the Canadian sales territory.

Serving the Central District of the Canadian territory, the Dalex office in Toronto is located at 100 Floral Parkway, and embraces the area from Kingston west to Whiite Rver, and north to Wilgar, Ontario. The Dalex Montreal office is located at 6834 Second Ave., in the Rosemont section, and serves the area identified as the Eastern District which, excluding the city of Kingston, reaches east from that point to Pembroke, Ont. H. D. Hylands is the general manager of this office, and together with John H. Gatchet will constitute the technical staff serving the Montreal district.

Dalex Co., Ltd., operates with a staff of about thirty-five, including sales representatives in the Maritimes, Montreal, Toronto, Brantford and London. D'Arch F. McConvey, president and general manager of Dalex, was formerly associated with Dominion Rubber Co., Ltd., Montreal, and later with the Industrial Chemical Division of Standard Chemical Co., Ltd.

A prominent Canadian chemist, Roger Gaudry, 42, assistant director of research, Ayerst, McKenna and Harrison Ltd., Montreal, has been elected president of the Chemical Institute of Canada for 1955-56. Dr. Gaudry is widely known for his research work in biochemistry, particularly on the synthesis and metabolism of amino acids and was born in Quebec City. He is a graduate in Arts and Science from Laval University. In 1937 he was awarded a Rhodes Scholarship to Oxford University where he specialized in organic chemistry under Sir Robert Robinson. In 1940 he joined the teaching staff at Laval University, Quebec City, and in 1945 he was appointed associate professor in biochemistry in the School of Medicine at Laval, being appointed full professor of general and organic chemistry there in 1950. In 1954, he left Laval to become assistant director of research at Ayerst, McKenna and Harrison Ltd., pharmaceutical and fine chemical manufacturers of Montreal. Dr. Gaudry is the author of some 35 papers, mostly on new syntheses of amino acids. He is a Fellow of the Royal Society of Canada and was the winner of the Prix David in science in 1942, 1946 and 1950.

The Supreme Court of Canada has ordered the Firestone Tire and Rubber Co. (of Hamilton, Ont.) to pay $13,000 in business taxes to the City of Hamilton. The company asked an abatement or refund of its 1952 business tax on the ground that its Hamilton plant was out of business for a time due to a strike. The Hamilton Court of Revision and Ontario Municipal Board granted the abatement but the Ontario Court of Appeals ordered the company to pay. The Supreme Court upheld the decision of the Court of Appeals.

Employees of the Goodyear Tire & Rubber Company plant in New Toronto recently voted to turn down a company wage offer and thus set the stage for a strike of 1,700 men. The union, Local 232 of the United Rubber, Cork, Linoleum and Plastic Workers of America (CIO-CCL), had asked for a 15-cent across-the-board increase.

The company offer, through a conciliation board, was a four-cent an hour increase and a jump of two and three cents in night shift differentials. Union local president Len Collins told the meeting that unless a better offer was received, their next meeting would probably be for a strike vote. The men at present are receiving an hourly wage of from $1.41 to $1.90.

Formea Chemicals, of Toronto, has launched a suit for $500,000, or more, in damages against the Polymer Corp. of Sarnia, Ont., for alleged copyright infringement. The plaintiffs claim Polymer agreed to pay a percentage on all sales on an invention called "Polymeric Compositions" until payments amounted to "$250,000, but canceled the agreement after paying Formea $67,315." The claim statement said that, following cancellation of the agreement, Polymer "made and sold another material which embodied or made use of an invention claimed in the said patent, but the defendant has not accounted to the patentees."

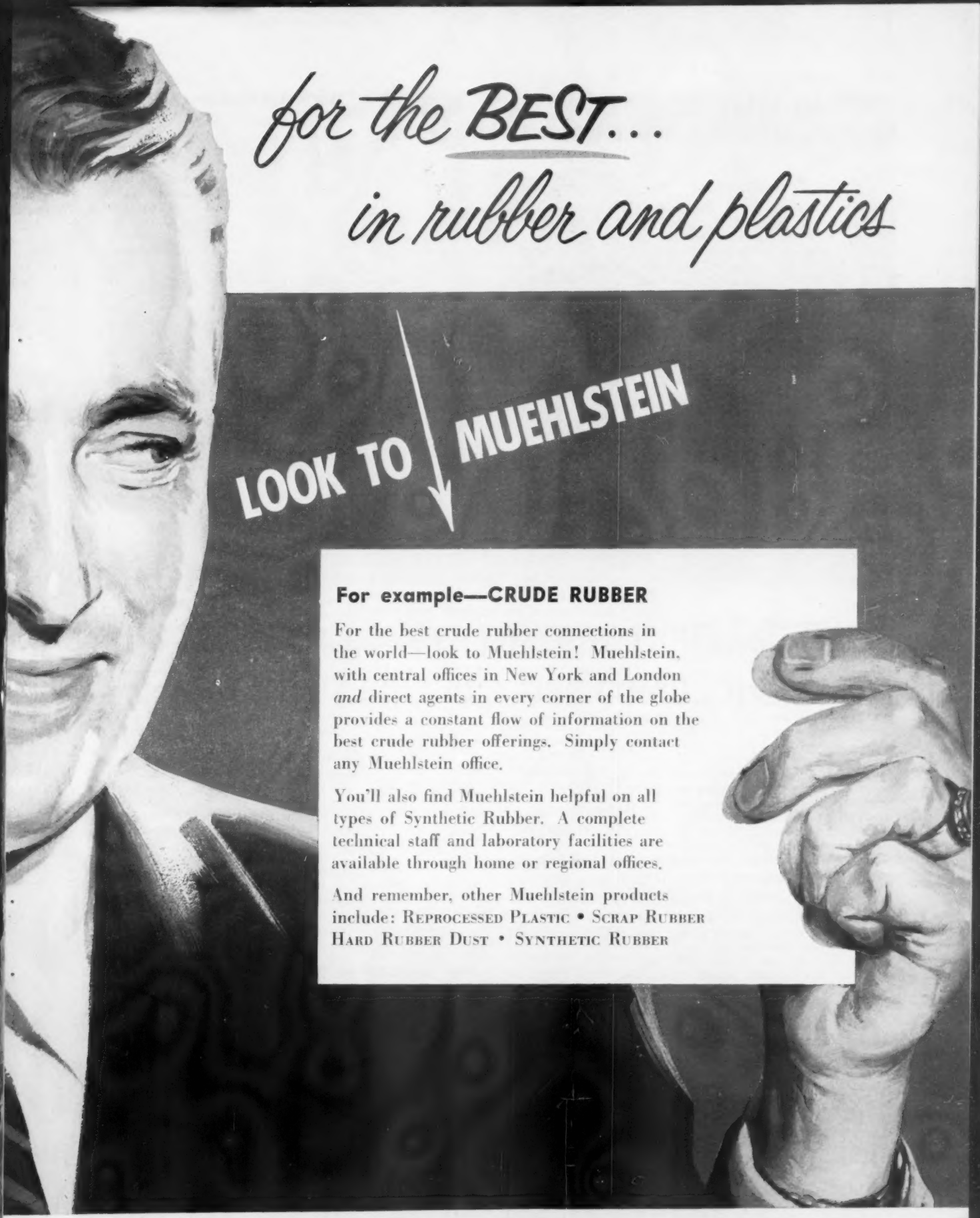
Following a recent meeting of the board of directors of Gutta Percha & Rubber, Ltd., M. O. Simpson, Sr., announced the following changes in the executive officers of the company: J. R. Belton, formerly vice-president and general manager, has been appointed president, and M. O. Simpson, Jr., will assume the newly-created post of executive vice-president, responsible to the president for the company's operation. M. O. Simpson, Sr., will continue as Chairman of the board of directors.

Canada Wire & Cable Co., Toronto, subsidiary of Noranda Mines, Ltd., has completed arrangements with General Cable Corp., New York, N. Y., to form a company for Canadian manufacture of telephone cables. The new firm with its plant at Winnipeg, Manitoba, will be called Telecable & Wire, Ltd., and will be managed by Canada Wire. General Cable will have a substantial minority interest.

Rhodia, Inc., New York, N. Y., has announced the appointment of Naugatuck Chemical Division of Dominion Rubber Co., Ltd., as sales and technical representative in Canada. The Canadian firm will sell and service both Rhodia's "Alamask" industrial reodorants and its aromatic chemicals. Naugatuck maintains offices in Montreal, Toronto and Winnipeg.

Stan Hills has been appointed district manager of the Toronto Branch of B. F. Goodrich, Canada, Ltd. Born in Toronto, Mr. Hills has been with Goodrich since 1946 in various positions including wholesale and retail tire sales and budget sales administration.

J. P. Anderson, president of Dunlop Canada, Ltd., has announced the appointment of J. R. Swann as secretary-treasurer of the company.



For example—CRUDE RUBBER

For the best crude rubber connections in the world—look to Muehlstein! Muehlstein, with central offices in New York and London *and* direct agents in every corner of the globe provides a constant flow of information on the best crude rubber offerings. Simply contact any Muehlstein office.

You'll also find Muehlstein helpful on all types of Synthetic Rubber. A complete technical staff and laboratory facilities are available through home or regional offices.

And remember, other Muehlstein products include: REPROCESSED PLASTIC • SCRAP RUBBER HARD RUBBER DUST • SYNTHETIC RUBBER

H. MUEHLSTEIN & CO. INC

60 EAST 42nd STREET, NEW YORK 17, N. Y.

CRUDE RUBBER · SYNTHETIC RUBBER · SCRAP RUBBER · HARD RUBBER DUST · PLASTIC SCRAP

REGIONAL OFFICES: Akron · Chicago · Boston · Los Angeles · London · Toronto

WAREHOUSES: Akron · Chicago · Boston · Los Angeles · Jersey City

Obituaries

Hal Pond Eastman

Hal Pond Eastman, retired vice-president and director of the American Cyanamid Co., died on May 4 in Pasadena, Calif., after a long illness. He was 70 years old. Mr. Eastman joined American Cyanamid in 1913 as chief plant engineer and was elected vice-president and director in 1947. He retired in 1950. He was president of North American Cyanamid, Ltd., from 1943 to 1950. He was also vice-president and director of the Arizona Chemical Co. and the Porocel Corp. He was a director of Southern Minerals Corp., Southern Pipelines Corp. and Southern Petroleum Corp. Earlier in his career, as general superintendent of American Cyanamid's Niagara Falls, Ont., plant, he designed and installed some of its most important equipment. He contributed also to the development of a commercial process for producing cyanide. Mr. Eastman was born in Oxford, Nebr. He received a degree in chemical engineering from the University of Michigan. For many years he resided in Bronxville, N. Y., and was a member of the Rockefeller Center Club and the Siwanoy Country Club.

Thomas M. Hughes

Thomas M. Hughes, manager of dealer operations for the Seiberling Rubber Co., Akron, Ohio, and one of the firm's oldest employees in point of service, died on May 16 after a serious illness. He was 60 years old. Mr. Hughes began his sales career with Seiberling in 1922, less than three months after the company was founded. During his service with the company, he held various positions, including assistant traffic manager, manager of commercial sales, manager of accessories and repair materials sales, and assistant to the general sales manager. He was the first editor of the company's employee newspaper, "The Seibeneer," and started the company's first dealer publication, "The Seiberling News." A native of Monroe, Tenn., Mr. Hughes attended Oklahoma University and served in the field artillery during World War I. Before joining Seiberling, he was with the Goodyear Tire & Rubber Co. He was a member of the American Legion, the Akron Masonic Lodge 83 and was a charter member of the Seiberling 25 Year Club.

Henry C. Magnuson

Henry C. Magnuson, foreman of the Milling Department for the Minnesota Rubber and Gasket Co., Minneapolis, Minn., died on May 16 of a heart attack. He was 58 years old. A native of Lindstrom, Minn., Mr. Magnuson had been an employee of the firm for almost seven years. Previously, he had been employed by the Durkee-Atwood Co. He was a veteran of World War I, a member of the American Legion and a Mason. Surviving are his wife and daughter.

Harold G. Robinson

Harold G. Robinson, vice-president and a director of Whittaker, Clark & Daniels, Inc., New York, N. Y., died on May 3. He was 57 years old. Mr. Robinson was originally associated with the firm of W. B. Daniels in 1916 and thereafter became a sales representative for the new company when W. B. Daniels and W. H. Whittaker Co. combined in 1918. In 1940, he became executive vice-president of Whittaker, Clark & Daniels. He was active in the executive direction of various companies associated with Whittaker, serving as an officer and director of Thomasset Colors, Inc., Newark, N. J., and as a director of Canada Talc Industries, Ltd., Madoc, Ont., Can. During World War I, Mr. Robinson served in Naval Aviation. He was a member of Gramercy Lodge 537 F. & A. M. in New York and the Wool Club. Surviving are his wife and son.

George Conrad

George Conrad, retired B. F. Goodrich Co. employee who built the first tires for the first automobile sold in America, died on May 11. He was 85 years old. Mr. Conrad worked for Goodrich more than 25 years and in 1898 built the tires for a Winton automobile that the company made for resale. The automobile with its original tires is now in the Smithsonian Institution. Born in Greensburg, Ohio, Mr. Conrad was a life resident of the Akron area and helped to survey and lay out the town of Barberton. After leaving Goodrich, he was a landscape gardener for many years. He was a member of the Boulevard Evangelical United Brethren Church for 45 years and served as custodian. For many years he was a class leader. Mr. Conrad was a member of Kenmore Lodge 927, Independent Order of Odd Fellows.

Ernest Calvin

Ernest Calvin, vice-president and treasurer of the Bearfoot Sole Co., Inc., Wadsworth, Ohio, died on May 9 of a heart attack. He was 58 years old. Mr. Calvin also served on the company's board of directors and was treasurer of the Bearfoot Airway Corp. Born in Nashville, Ind., he attended DePauw University and taught school afterwards for a short time in Indiana. In 1917, Mr. Calvin went to Akron, Ohio, where he was employed in the office of the Firestone Tire & Rubber Co. That year he joined the U. S. Navy and served until the end of World War I. After working for a Cleveland firm for a while, he was employed by Goodyear Tire & Rubber Co. for three years. In 1924, he left Goodyear to join his two brothers who had just organized the Bearfoot Sole Co. in Barberton, Ohio. Mr. Calvin is survived by his wife, a son and a daughter.

Need a prsonal copy of RUBBER AGE? Use the coupon on page 449.

ASTM 1954 Proceedings Available

The 1954 edition of the ASTM Proceedings has recently been published. The 1400-page volume records the technical accomplishments of the American Society for Testing Materials for the year 1954. It includes many technical reports and papers together with discussion which has been offered to the Society during the year and accepted for publication in the "Proceedings." Leading the volume is the Summary of the Proceedings of the 57th Annual Meeting, held in June, 1954, listing by title and author the program for each of 36 sessions. Reports of the technical committees, of which there are 68, and their appendices provide a wealth of useful technical information as do the 37 technical papers and discussions on a wide variety of subjects pertaining to research and testing of materials. In addition to the papers and reports embodied in the Proceedings, there are listed in the table of contents all symposiums published separately as Special Technical Publications (STP's) and all papers published in the ASTM Bulletin. Copies of the ASTM Proceedings may be purchased from the American Society for Testing Materials, 1916 Race St., Philadelphia 3, Penna. The price is $12.00 per copy.

Constructs New Warehouse

Construction of a new warehouse with a capacity of half a million tires at the Pottstown, Penna., plant of the Firestone Tire & Rubber Co. was recently announced. The new warehouse, a one-story brick and steel structure, will have 300,000 square feet of storage space. Purpose of the new building is to expedite delivery of all types of Firestone tires to dealers and stores throughout the eastern states. Dimensions of the new building are 790 by 385 feet. The new warehouse will adjoin the present building used to warehouse tires produced in the Pottstown plant. At two enclosed loading docks, 20 trucks and 16 railroad cars can be loaded or unloaded at the same time. Within the warehouse, the most modern mechanical handling equipment will be installed to move, sort and store tires. Besides new warehouse construction at Pottstown, Firestone has a 382,000 square foot tire warehouse nearing completion at its plant in Des Moines, Iowa. Another building for warehousing plastic resins materials will be built near the company's resin plant at Pottstown. The structure, of corrugated transite on steel, will extend 200 by 140 feet.

Rexford O. John

Rexford O. John, manager of corporate accounts for the B. F. Goodrich Co., died on May 18. He was 65 years old. Mr. John had been with Goodrich for nearly 42 years. Born in Conover, Ohio, he joined the company in 1913 in the paymaster's office. Later, he became manager of the Branch Auditing Department and was named assistant manager in the controller's office. In 1941, Mr. John became manager of general accounting and taxes and was named manager of corporate accounts in 1947. Surviving are his wife and a daughter.

FOR TOUGHER, LONGER MILEAGE TUBELESS TIRES THAT DON'T SQUEAL...USE CIRCOSOL-2XH

Taking the objectionable squeal out of the new tubeless tires—without sacrificing abrasion resistance or toughness—is a problem in tread compounding as well as tread design. Tread design, of course, is somebody else's problem. But Sun's Circosol-2XH will solve your compounding problem.

The unique properties of Sun's Circosol-2XH are due to its scientifically controlled balance of naphthenic and aromatic hydrocarbons. By using Circosol-2XH in your tread stock, you can get a tubeless tire with high abrasion resistance, high flex-crack resistance, long mileage...and most important, it will be quiet running.

The cost of these extra advantages of Circosol-2XH is low. Enough Circosol-2XH for an 8.00 x 15 size, 100 level tire costs less than 2¢ more than the cheapest softener you can possibly buy.

Get the full story on both the advantages *and the new low price* of Circosol-2XH from your Sun representative... or write at once to SUN OIL COMPANY, Philadelphia 3, Pa., Dept. RA-6.

SUNOCO®

INDUSTRIAL PRODUCTS DEPARTMENT

SUN OIL COMPANY Philadelphia 3, Pa.

IN CANADA: SUN OIL COMPANY, LTD., TORONTO AND MONTREAL

UNDERWOOD & UNDERWOOD

Quality Makes the Difference

Do away with costly formula changes and adjustments in your compounding. Quality can make the difference — try A. Gross & Company's HYDROGENATED RUBBER GRADE STEARIC ACID and GROCO RED OILS. Uniform in all respects at all times, these fatty acids can help you avoid trouble. Try them and see.

For full information, send for our new catalog "Fatty Acids In Modern Industry"

	Red Oil GROCO 8	Hydrogenated Rubber Grade Stearic Acid
Titre	8° — 10° C.	55° C. min.
Cloud Point	46° — 49° F.	
Color 1" Lovibond Red	2 max.	8 max.
Color 1" Lovibond Yellow	15 max.	50 max.
Unsaponifiable	1.5% max.	
Saponification Value	198 — 203	198 min.
Acid Value	197 — 202	190 min.
% F.F.A. as Oleic Acid	99 min.	
Iodine Value (WIJS)	93 max.	13 max.
Refractive Index 50° C. (Average)	1.4495	

a. gross & COMPANY

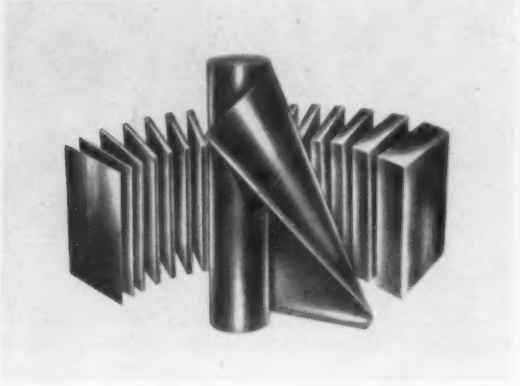
MANUFACTURERS SINCE 1837

295 MADISON AVENUE, NEW YORK 17, N. Y.
FACTORY: NEWARK, N. J. • DISTRIBUTORS IN PRINCIPAL CITIES

New Goods

BWH Sheet Rubber Packing

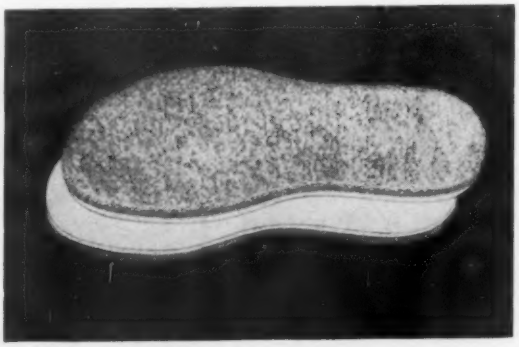
Boston Woven Hose & Rubber Co., Boston 3, Mass., has announced a complete range of sheet rubber packing. The new line of packing material is made by the company's Rotocure process, which is designed to cure rubber continuously. Packing made by the Rotocure method is more uniformly cured for greater stability, has a smoother finish, and possesses all requisites of



superior packing through better gauge control, the company states. Boston sheet rubber packing is used as flange gasket material for air, hot or cold water, saturated steam, and hydraulic services. It is also used for bumpers, mounting pads and many general gasket service applications. Available thicknesses are from sizes $\frac{1}{16}$-inch through 2 inches; width sizes are from 36 inches to 72 inches.

Fleece and Foam Insole

Scholl Manufacturing Co., 211 W. Schiller St., Chicago, Ill., has introduced a new insole made of 100% sheep wool. The bottom surface of the insole is made of a layer of natural latex foam which has been cured to the fleece. The layer of foam is said to give the



insole additional cushioning properties. It is also said to give "body" to the insole, making it easy to insert into shoes and in keeping it from sliding around in the shoe. The insoles can be washed without shrinking, curling or becoming brittle. Made in wide shank patterns, the insole is available in sizes 7 to 12 for men, and sizes 5 to 9 for women.

So-Lo Marx Hip-Totes

So-Lo Marx Rubber Co., Loveland, Ohio, has announced a new fishing boot called "Hip-Totes." A pair of the new boots weigh only 21 ounces. The new boots are made of rubber latex. Because they are of one piece, there are no seams to split out or leak. Tough and long-

wearing, the company states that the new boots won't stiffen or crack in cold weather. They offer an easy stretch action which makes it possible to sit, squat, climb and kneel while wearing the boots without binding. They can be worn inside a pair of old shoes, or with gym or wading shoes.

Fire Engine Suction Hose

A new fire engine suction hose of unusual flexibilty and light weight without sacrificing dependability in fire fighting service has been announced by the Thermoid Co., Trenton, N. J. Available in seven sizes from 2½ inches to 6 inches ID, the weight per ton foot length (uncoupled) runs from 20 pounds for the 2½ inch ID size to 60 pounds for the 6-inch. A special nylon wrap construction is used to obtain a black cover which contributes to good fire engine appearance. Light weight and flexibility permit quick connection to the hydrant, the company states.

Goodrich Gasoline Tank Hose

A new gasoline tank hose, said to be 20% lighter in weight and more flexible than any other hose of its type, has been announced by the B. F. Goodrich Co. Industrial Products Division, Akron, Ohio. Unusual resiliency of the new hose construction reduces by half the force required to bend conventional tank hose, Goodrich states. Called "Type 82-A", the hose is recommended for tank truck, tank car and bulk station service. It conducts gasoline, distillate, kerosene, Diesel oil and other fuel oils.

IN PLASTISOLS...

...PLASTICIZERS ARE AS DIFFERENT AS PEOPLE!

Choose the right RC Plasticizer to do the job best!
for specific properties in Plastisols...

TRY

RC Plasticizer ODP
for High Hardness Stocks

RC Plasticizer DIOA
for Dipping Characteristics

RC Plasticizer TG-8
for Low Temperature Flex

RC Plasticizer O-16
for Viscosity Stabilization

RC Plasticizer B-17
for Low Cost in Heavy Pieces

Write today for samples!

We'll send you a brochure on other RC products that can speed your operation, make finished products better! You can rely on Rubber Corporation's 25 years of experience.

25th Anniversary RC

RUBBER CORPORATION OF AMERICA
New South Road, Hicksville, N.Y.
Sales Offices:
New York, Akron, Chicago, Boston

BUFFALO RECLAIMS

Serving You Better

WITH OUR MODERN RECLAIMATOR PLANT

Here you'll find the industry's most modern plant coupled with its most modern process. Reclaims made by our patented, continuous-flow **Reclaimator Process** are available in all Standard Grades . . . powdered, extruded slabs, or sheeted slabs.

The addition of the **Reclaimator Process** to our standard pan and digester methods affords the industry the widest selection of reclaims FOR EVERY PURPOSE.

72 years serving the industry,

solely as reclaimers.

U.S. RUBBER RECLAIMING COMPANY, INC
BOX 365 BUFFALO 1, NEW YORK

Anaconda Portable Cords

A complete line of portable cords for rugged applications has been announced by Anaconda Wire & Cable Co., 25 Broadway, New York 4, N. Y. It includes a new "Securityflex" cord, "Industrial" cord and "Service" cord. The Securityflex cord is designed for unusually severe applications, where cords are exposed to the elements and subjected to abrasion, crushing, impact, shock, moisture, oils, grease and acids. It is especially adapted to industrial application and meets the requirements of the Federal Bureau of Mines and Pennsylvania Department of Mines for use in mines. According to Anaconda Wire, "Securityflex will last longer under abuse than any other cord." For severe applications, the new Anaconda Industrial cord combines serviceability and economy. It resembles the Securityflex cord in all respects, except that the neoprene jacket is cured by continuous vulcanizing. The jacket is free stripping and can be used in automatic stripping machines.

The Service cord is designed for hard service use, where normal mechanical damage and dampness are encountered and exceptional flexibility is needed. Typical uses are on appliances, office equipment, portable tools, and trouble lights. The Securityflex cords are available in Type SO, heavy-duty 600V, and Type SJO, light-duty 300V. Industrial cords are available in Type SO and Type SJO. Service cords are available in Type S and Type SJ, stationary and constant service. Cords are packaged in standard 250-foot coils in individual cartons which are labeled in one compact area for easy handling in the stock room. Service cords sizes No. 18 and No. 16 are packed on 250-foot spools in cartons.

Elsie the Cow Crib Toy

Oak Rubber Co., Ravenna, Ohio, has just released a soft rubber toy patterned after the famous Borden Co. cow. "Elsie the Cow" is the latest addition to Sun Rubber's line of "Squeeze-Me Toys," designed especially

for babies. The toys are all rubber, including the whistle, and seamless. The toys are tasteless and the colors won't come off. Elsie the Cow comes packaged in a colorful windowed "milk carton" box.

Professional Gardener's Hose

A new Koroseal garden hose, designed for professional gardeners, that delivers three to four times as much water a minute as regular plastic hose of the home gardening type, has been announced by the B. F. Goodrich Co. Industrial Products Division, Akron, Ohio. The new hose has an inside diameter of three-quarters of an inch. Called "Professional Gardener's Hose", the new lightweight, tough Koroseal hose is easy to handle, can be twisted and knotted without damage and resists abrasive wear. The hose is designed for use on truck farms, estates, parks, nurseries, greenhouses, golf courses and wherever a lightweight hose is needed to operate sprinklers and watering equipment. The hose is designed for open end use on systems where high pressures are not required. Bright green in color, the hose has a 16-sided exterior and is coupled with heavy duty, machined brass reattachable couplings. The hose is available in 25, 50 and 75-foot standard coupled lengths. Uncoupled lengths up to 300 feet are also available.

Vibrasorb V-Belt

B. F. Goodrich Co., Industrial Products Division, Akron, Ohio, has developed a new rubber V-belt that is said to assure smoother, quieter operation of such motorized home appliances as attic fans, air conditioning units, forced-air furnaces, automatic clothes dryers and workshop equipment. According to the company, the new "Vibrasorb" V-belt absorbs 24% more vibration than belts presently rated as low vibration belts. The Vibrasorb belt's improved performance has been developed through the use of special materials giving a built-in spring action. The belt absorbs shock so that little or no vibration is permitted to reach the framework of the equipment. By isolating and absorbing vibration, the belt minimizes the transmission of vibration from one pulley to another. Flex life of the Vibrasob V-belt is said to be 90% greater than that of standard V-belts. At present, the Vibrasorb belts will be available only to equipment manufacturers.

Synthetic Fabric Conveyor Belts

Two new high tension conveyor belts constructed with new synthetic fabrics have been announced by the Boston Woven Hose & Rubber Co., Boston 3, Mass. Designed for heavy duty use on long center and high lift installations, "Boston High Load" and "Boston Haul King" belts offer the advantage of light weight with high strength. These new belts have working tension ratings up to 110 pounds per inch per ply. Boston High load is recommended for extra heavy service and Boston Haul King for general heavy duty in high tension, high stress applications. Both types are available with fabrics of either all rayon or chemically treated cotton warp with nylon filler. The new belts have high strength to gauge ratios and high strength to weight ratios resulting in thinner and lighter construction than possible with cotton duck belts of identical numbers of plies. This design permits longer centers, heavier loads, lower horsepower drives and smaller pulley diameters.

Take a long time for this copy of RUBBER AGE to reach your desk? Why not get a copy sent to your home? Use the coupon on page 449.

Why is this wire wiser?

Wiser and better because of a special rubber covering compound employing a **PANAREZ** hydrocarbon resin.

In GRS electrical wire covering applications, **PANAREZ** resins produce stocks which are economical, smooth, glossy, easy processing and fast extruding. They provide excellent color and color stability. They have low specific gravity. They enhance such properties as tensile strength, elongation, tear resistance, abrasion resistance, electrical characteristics and aging qualities.

Applied in many ways in the compounding of synthetic rubbers, **PANAREZ** resins are helping produce better products, *and at the same time effect decided economies.*

Whether your business has to do with wire, shoe soles, belting, floor tile, hose, insulators or other products, we welcome the opportunity to work confidentially with you on your particular problem. For full information write or wire Dept. RA

HYDROCARBON PANAREZ RESINS

PAN AMERICAN CHEMICALS

PAN AMERICAN CHEMICALS CORP

555 FIFTH AVENUE, NEW YORK 17, N. Y.

PANAREZ Hydrocarbon resins

PANAPOL Hydrocarbon drying oils

PANASOL Aromatic solvents

PROCESSORS

of

NYLON - RAYON

and

OTHER FABRICS

All Widths and Weights

with

RESORCINOL FORMALDEHYDE LATEX Compounds

also

CAPITOL LINER PROCESS

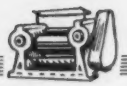
COMPLETE LINERS FURNISHED

TEXTILE PROOFERS INC.

Jersey City 5, N. J.

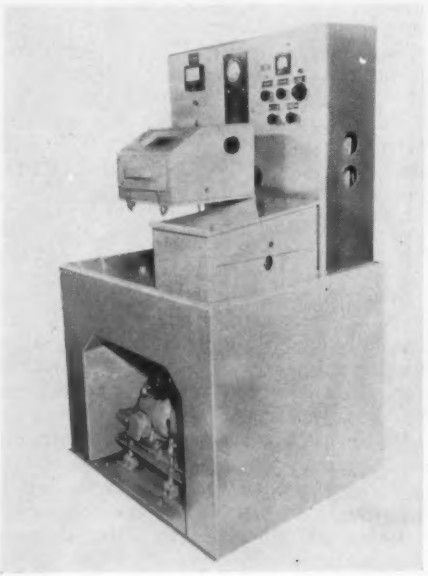
"A QUARTER OF A CENTURY EXPERIENCE"

New Equipment



Lord Dynamic Modulus Tester

Lord Manufacturing Co., Erie, Penna., has designed a machine to measure the dynamic damping and elastic properties of rubber, rubberlike materials and plastics under conditions of strain, temperature and frequency which are of particular interest to the designer of vibration isolators. The program to investigate the



dynamic properties of elastomers was undertaken to provide the design engineer with information which would allow the most advantageous selection of material, and to assist in the development of improved rubber compounds.

Advantages of the machine are: (1) Measurements can be made more quickly and with a greater degree of accuracy than is possible with other methods; (2) The machine may be calibrated to read both the dynamic damping and dynamic elastic modulus without calculations; (3) The machine has a variable speed from 2 to 60 cycles per second with the currently used drive; (4) The specimen used can be flexed to an amplitude of $\pm$ 1/8 inch, and (5) It is possible to apply static prestrain in the direction of the dynamic strain and also perpendicular to the direction of dynamic strain.

Two of these machines have been built by the company. One was made for a leading manufacturer of synthetic rubber and the other is being used by the Lord Research Department to provide materials best suited to the environmental conditions of the user of Lord bonded-rubber parts.

To meet the requirements of the Argonne National Laboratory, the Baldwin-Lima-Hamilton Corp., Philadelphia 42, Penna., has developed a unique **portable hydraulic testing machine** of 60,000 pound capacity in tension and compression. It is known as the Model 60-A Baldwin-Tate-Emery universal portable testing machine.

Slit-Go Plastic Film Slitter

A precision built slitter-rewinder, the Model 2500 Plastic Film Slitter-Rewinder introduced by Slit-Go, Inc., Bernardsville, N. J., produces uniform rewind rolls to close tolerances at speeds up to 2500 fpm. The threading speed of the unit is 20 fpm and upward. Controlled acceleration and deceleration are features of

the unit. The finished roll has a 12-inch maximum rewind diameter, single or alternately staggered on separate shafts. The pressure head is lowered for surface rewinding with variable pressure control and raised for core rewinding and unloading. Razor blades can be mounted for slitting with a minimum of ⅜-inch slitting widths. There are also special units for slitting to 1/16-inch width. The slitter roll is of hardened and polished steel; the feed rolls are steel, plastic, or rubber covered; the idler rolls are tubular aluminum. All rolls are mounted on ball bearings. The rewind shafts are 1¼ to 3 inches, and special shafts are available for smaller or larger cores. The main drive is totally enclosed, forced lubrication throughout, silent chain. A 5 hp motor is furnished with the 27-inch machine and a 7½ hp motor with the 37-inch machine, the two sizes presently available. Standard equipment includes two rewind shafts, 1 mill roll shaft, 50 razor blade holders and 50 collars.

Tenney Environmental Test Chamber

A new high and low temperature environmental testing chamber, incorporating a removable dry ice compartment as a source of cold air, has been introduced by Tenney Engineering, Inc., 1090 Springfield Road, Union, N. J. The chamber—Model TDI-8—was developed specifically for use with economical dry ice cooling for laboratories and testing organizations which require low cost test facilities. Temperature range of the chamber is from −100° to 200°F., meeting a broad range of MIL testing specifications. Reported pull-down is from ambient to −100°F. in approximately 60 minutes, while 200°F. can be reached in approximately 30 minutes. Cubic interior of the test chamber is 8 cubic feet. The unit plugs into a standard 110 volt line, and is equipped with swivel casters for greater mobility. Temperature control is automatic, and indicating or recording instrumentation is available as optional equipment.

THE CARTER BELL MFG. CO.
SINCE
CARTER BELL PRODUCTS
1903
SPRINGFIELD, NEW JERSEY

Vulcanized
VEGETABLE
OILS

rubber substitutes

Types, grades and blends
for every purpose, wherever
Vulcanized Vegetable Oils
can be used in production
of Rubber Goods—
be they Synthetic, Natural,
or Reclaimed.

A long established and proven product

THE CARTER BELL MFG. CO.
SPRINGFIELD, NEW JERSEY

Represented by
HARWICK STANDARD CHEMICAL CO.
Akron, Boston, Trenton, Chicago, Denver, Los Angeles

Oronite

original and major producer of

POLYBUTENES

Since 1935, when Oronite Polybutene was first produced, this important raw material has been widely used in a variety of rubber products. You will find these clear, light colored, chemically inert liquids have a unique tacky property. A technical bulletin giving the physical characteristics and properties of Oronite Polybutenes is available to you on request. Our long experience with Polybutenes is at your disposal—contact the Oronite office nearest you.

TYPICAL TESTS OF ORONITE POLYBUTENES

	No. 24	No. 32	No. 128
Flash Point, Cleveland, °F.	375	385	480
Fire Point, Cleveland, °F.	435	450	570
Pour Point, °F.	20	35	60
Vis. at 100°F., S.S.U.	41,250	121,400	—
Vis. at 210°F., S.S.U.	1,050	2,950	18,620
Viscosity Index	110	118	—
Color, Gardner	1	1	1
Specific Gravity, 60/60°F.	0.90	0.90	0.91
Pounds per Gallon, 60°F.	7.2	7.5	7.6
Molecular Weight, Average (Approx.)	935	1,330	1,500
Acid Number (mg. KOH/gm.)	0.01	0.01	0.01
Carbon Residue, %	None	None	None
Free Sulfur, %	None	None	None
Total Sulfur, %	0.03	0.02	0.02
Organically Bound Chloride (as Chlorine), % by wt.	0.002	0.006	0.007
Inorganic Chlorides & Sulfates, %	None	None	None
Coefficient of Expansion per °C (between 15°C & 100°C)	.00065	.00060	.00061

"Basic Chemicals for Industry"

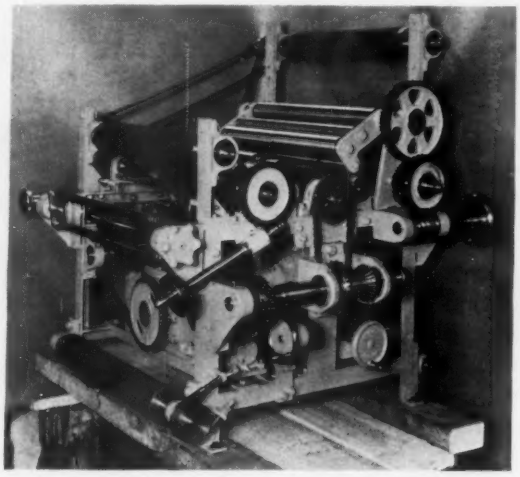
ORONITE CHEMICAL COMPANY

ORONITE CHEMICAL COMPANY
200 Bush Street, San Francisco 20, California
30 Rockefeller Plaza, New York 20, New York
714 W. Olympic Blvd., Los Angeles 15, Calif.
20 North Wacker Drive, Chicago 6, Illinois
Mercantile Securities Building, Dallas 1, Texas
Carew Tower, Cincinnati 2, Ohio

3402

Mawaco Laboratory Roller Coater

A laboratory size universal roller coating machine, said to be almost a scale model in every detail of the company's standard coating machines, has been introduced by the Mawaco Machine Co., Inc., 56 Bogart St., Brooklyn 6, N. Y. Designed to duplicate exact working conditions encountered in the factory, the unit can be mounted on a



laboratory table and is intended to be set up in front of a small dryer. It is approximately 28 inches long, 28 inches wide, and 35 inches high, and is equipped with 20-inch rollers which permits the processing of any width of material up to approximately 18 inches.

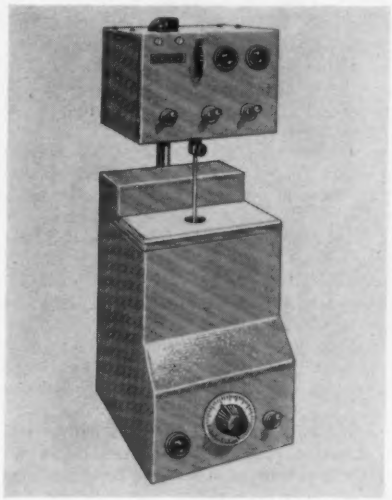
The laboratory unit is completely self-contained and is equipped with a variable speed motor which permits operation at a speed of approximately one to three yards per minute. Due to the fact that the relative speed of the compound application roller as compared to the speed of the cloth through the machine is instrumental in obtaining proper coverage of the fabric, and that this speed relation often has to be altered on different types of fabrics, the rubber application roller is driven from the variable speed motor through a PIV unit. This means that once the proper relation between surface speed of the roller and speed of the fabric has been established by experimentation, the setting of these two speeds always remains in the same proportion, whether the machine is operated at one yard or three yards per minute.

Designed for application in all industries which have inherent corrosion conditions, the **corrosion-proof A-C motor** developed by the Reliance Electric & Engineering Co., 1088 Ivanhoe Road, Cleveland 10, Ohio, qualifies for use in all Class I, Group D and Class 2, Groups E, F, and G Classifications.

Designed to produce a continuous supply of pressure-sensitive tape at the point of use ready for immediate application, the **Williamson Tapemaker,** produced by Williamson Adhesives, Inc., 8220 Kimball Ave., Skokie, Ill., can be installed on production lines to handle any standard taping operation.

Castor Gelometer

The Castor Gelometer, a new instrument for the automatic determination of gelation time or stability of polyesters and phenolics in research, control or production, has been introduced by the Burrell Corp., 2223 Fifth Avenue, Pittsburgh 19, Penna. Gel tests can be run quickly and easily at various temperatures with the



new self-contained unit-package instruments. An oscillator, sensitive from 5,000 to 50,000 centipoises, automatically stops a timer when a desired viscosity range is reached. A constant temperature bath ranges from ambient to 212°F. No clean up time is required as test tubes and oscillator strip are simply discarded after use.

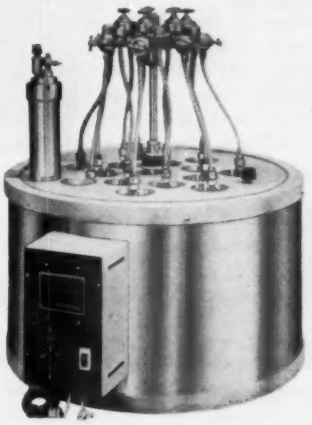
In operation, the Gelometer provides more dependable reproducible results than can be achieved by manual testing. Once set up for a test it runs to completion, freeing the operator or technician for other work in laboratory or plant. Readings can be taken at any time. It is suitable for use for the SPI Gel Test for polyester resins. Two models are offered—Castor Gelometer Model CE-50 for gelation tests has calibrations in seconds or tenths of minutes and Model CE-52 for stability tests has calibrations in tenths of minutes or minutes. Both units are equipped with 4-digit counters and are for operation on 115 volt, 60 cycle a-c current. A constant temperature bath, complete with controls and support rod, is furnished separately.

Custom-built hand trucks to fit streamlined materials handling operations may now be obtained from the Leebaw Manufacturing Co., 65 Wayne Ave., Youngstown, Ohio. Basic, all-steel welded utility trucks can also be obtained from the manufacturer in a wide range of sizes and types.

A **new type boiler** has been designed for industrial use by the Cyclotherm Division of the U. S. Radiator Corp., Oswego 1, N. Y. The new unit is basically a hot-water generator, but a few simple adjustments convert it to steam operation in a few seconds.

NEW Heating Bath for PRESSURE AGEING

With 14 Individual Containers for pressure ageing in either air or oxygen



SCOTT Tester* Model LGP now provides the highly successful Aluminum Block Heating Bath for pressure ageing of rubber specimens in either air or oxygen. Has 14 single, removable, seamless stainless steel containers having 1½" x 8" inside dimensions. Each container is equipped with its own controllable source of supply of the ageing medium, which in turn originates from a central manifold. The containers have a quick sealing closure, sample racks, individual safety valve, and purging relief. The instrument is provided with suitable controls to produce temperatures in accordance with industry practice by means of 4 1000-watt heaters requiring an electrical connection for 220 volts AC current. A visual reading thermometer indicating temperature is also included.

*Trademark

Literature Upon Request

SCOTT TESTERS, INC. 85 Blackstone St. Providence, R. I.

Standard of the World

Now Available

Annual Report on the Progress of Rubber Technology for 1954

(Volume XVIII)

(Prepared by the Institution of the Rubber Industry)

A valuable addition to the library of all those engaged or interested in the rubber industry. No less than 24 outstanding specialists in the rubber industry have contributed sections devoted to particular technological phases. A reading of the following subject listing will indicate the scope of this latest edition:

- Historical and Statistical Review
- Planting and Production of Raw Rubber and Latex
- Properties, Applications and Utilization of Latex
- Chemistry of Raw and Vulcanized Natural Rubber
- Physics of Raw and Vulcanized Natural Rubber
- Synthetic Rubber
- Testing and Equipment and Specifications Other than for Latex
- Compounding Ingredients
- Fibers and Fabrics
- Tires
- Belting
- Hose and Tubing
- Cable and Electrical Insulation
- Footwear
- Mechanical Rubber Goods
- Games, Sports Accessories, Toys, etc.
- Surgical Goods
- Textile-Rubber Composites, Solvents and Cements
- Cellular Rubber
- Hard Rubber
- Flooring
- Works Processes and Materials
- Machinery and Appliances
- Roads

RUBBER AGE
101 West 31st St.,
New York 1, N. Y.

Please send me ..... copy(ies) of the Annual Report on the Progress of Rubber Technology (Volume XVIII) @ $3.50 each.*

——Remittance Enclosed

——Send Invoice

Name .....

Address .....

.....

* Add 3% for N. Y. City addresses

Reviews

BOOKS

Emulsion Polymerization. By Frank A. Bovey, I. M. Kolthoff, Avrom I. Medalia, and Edward J. Meehan. Published by Interscience Publishers, Inc., 250 Fifth Ave., New York 1, N. Y. 6 x 9 in. 446 pp. $12.50.

Issued as Volume IX in the series of monographs on the chemistry, physics and technology of high polymeric substances published under the title of "High Polymers," this work obviously concerns itself with emulsion polymerization. The importance of emulsion polymerization in the manufacture of synthetic rubber is by now a recognized fact.

It will be recalled that shortly after the entrance of the United States into World War II, the subject of synthetic rubber became of extreme importance. Under the sponsorship of the Rubber Reserve Company, predecessor agency of the Office of Synthetic Rubber, research teams were established to investigate emulsion polymerization. Among these teams, the one led by Professor Kolthoff of the University of Minnesota was one of the most active. This group was concerned chiefly with the investigation of the underlying physical-chemical principles and of the chemical reactions of emulsion polymerization.

The present book is a broad survey and systematic interpretation of the various aspects of the kinetics of emulsion polymerization and of the properties of the intermediate and final products, and is based largely on the investigation mentioned above. It is by no means a research report, but rather a systematic treatment of the entire problem and the results achieved to date. It is therefore not only a record of past performance, but also a stimulus to research and development beyond the present stage of the art.

In all, there are eleven chapters, as follows: (1) Historical Background and General Considerations; (2) Nature of Free Radical Polymerization; (3) Initiating Systems; (4) Chain Transfer Agents; (5) Solubilization in Detergent Micelles; (6) Kinetics of Emulsion Polymerization; (7) Inhibition and Retardation of Polymerization; (8) Copolymerization in Emulsion Systems; (9) Experimental Methods in Emulsion Polymerization; (10) The Standard GR-S Recipe; (11) Activated Recipes. There are also author and subject indexes.

•

Report of the Mission of Enquiry into the Rubber Industry of Malaya. Available from the British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. 6½ x 9½ in. 76 pp. $1.15.

This report is the work of a body independent of the Malayan Government and of the rubber producing industry. It was charged with making an impartial investigation into certain aspects of the competitive position of the rubber producing industry. This investigation was completed in August, 1954, and the results and recommendations are contained in this published report (some of which has already appeared in various issues of RUBBER AGE). The report covers such phases as the future of natural rubber, the Malayan rubber industry, costs of estate rubber, the case for replanting, taxation, maintenance of existing capital, marketing and processing of smallholders' rubber, research and advisory work, and unemployment in the rubber producing industry. It poses three vital questions: (1) Is it possible for Malaya to increase its present output of rubber? (2) Must Malaya be content to maintain its present output of rubber? (3) Must Malaya resign itself to a gradual decline and eventual decay? The Commission's answer to these questions is that in spite of the age of her trees and the competition of synthetic rubber, Malaya can continue to prosper and her output of rubber can be increased, providing vigorous and united action is taken on an expanded replanting program. The report contains a wealth of information for those directly or indirectly concerned with the future of the natural rubber industry.

Mechanism of Polymer Reactions. By G. M. Burnett. Published by Interscience Publishers, Inc., 250 Fourth Ave., New York 1, N. Y. 6 x 9 in. 494 pp. $11.00.

The decade which has passed since the publication of Mark and Raff's work on the theory and practice of high polymeric reactions (RUBBER AGE, October, 1941, page 58) has seen many dramatic advances in the field of high polymer chemistry. These advances are reflected in the present book, which constitutes a new edition of Volume III in the series of monographs on the chemistry, physics and technology of high polymeric substances, but which has been issued as Volume IX in the series. The extensive growth of the subject has made it impossible to follow the pattern of the first edition, so in a sense the present book may be regarded as a completely new work.

The scope of the work is best indicated by the titles of its twelve chapters: (1) General Kinetics; (2) Experimental Methods; (3) Addition Radical Polymerization; (4) Kinetics of Radical Polymerization; (5) Gas Phase Polymerization; (6) Homogeneous Liquid-Phase Polymerization; (7) Rate Constants of Radical Polymerization Reactions; (8) Copolymerization; (9) Heterogeneous Liquid-Phase Polymerization; (10) Degradation of High Polymers; (11) Ionic Polymerization; (12) Condensation Polymerization. Author and subject indexes are included.

Referring to the wealth of data on the individual reactions making up the radical chain process in the bulk reaction which has appeared in the past several years, the author makes the point that the modifications brought about by the introduction of solvents are still not fully understood. He adds that "it may well be that it is in this field that much interesting and important information lies buried."

•

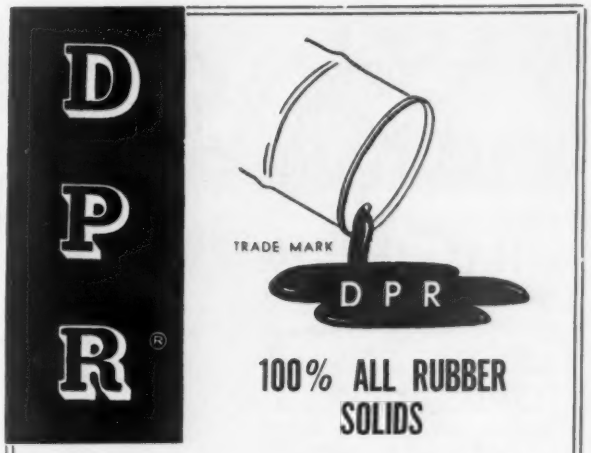
Plastics Tooling. By Malcolm W. Riley. Published by Reinhold Publishing Corp., 430 Park Ave., New York 22, N. Y. 4¼ x 7 in. 124 pp. $2.50.

Because no one can yet predict exactly how plastics will behave under all conditions of service, the use of plastics tooling is more of an art than a science. However, as the author of this down-to-earth book points out, sufficient experience has been gained to prove beyond a doubt that plastics can provide outstanding advantages when used properly for certain types of tools. The purpose of this book is to acquaint men in the metal-working industry who may still be unfamiliar with plastic resins, as to what these resins are, what they can do, and what types of tools are being made with them. The data presented may be considered as a status report. The discussion of plastics resins is not highly technical, nor does the book dig deeply into the chemistry involved. The author's entire purpose is to show how the composition of the resins affects their use in tooling. This he accomplishes in words and pictures. The book, the latest in the Reinhold Pilot Book Series, has ten chapters, a selected bibliography, and an index.

•

Standards on Textile Materials: 1954. Published by the American Society for Testing Materials, 1916 Race St., Philadelphia 3, Penna. 6 x 9 in. 698 pp. Heavy paper cover. $5.50.

The latest edition of this compilation brings together in compact, readily usable form, the ASTM test methods, definitions and terms, and specifications prepared by Committee D-13 on Textile Materials. This work gives in their latest form 111 ASTM standards, including 88 test methods, 16 specifications, 3 tolerances for filament yarns, 1 definition of terms relating to textile materials, and three recommended practices, one for interlaboratory testing of textile materials, another for designation of linear density of fibers, yarns and other textile materials in universal units, and the third for designation of yarn construction. In this latest edition, 25 of the test methods included in the previous edition have been revised and seven of the standards are new. A convenient table of contents is included, both by subject and ASTM serial designation. There is also the usual extensive index.


D
P
R®
TRADE MARK
D P R
100% ALL RUBBER SOLIDS
Natural & synthetic rubbers in flowable form.
Also special grades having superior compatibility with asphalt and polyethylene.
TECHNICAL LABORATORY INFORMATION AND SAMPLES UPON YOUR REQUEST
ORIGINATORS OF QUALITY DEPOLYMERIZED RUBBERS "SINCE 1906"
DPR, INCORPORATED
A Subsidiary of H. V. HARDMAN CO.
571 CORTLANDT STREET
BELLEVILLE 9, N. J.

BELL KAOLIN
BUILDS STRONG BODY
clean mechanized production
Speedy Delivery
Produced by the BELL MINE in Batesburg, S. C.
Meets Bell's rigid requirements for
UNIFORMITY • SERVICE
RELIABILITY • QUALITY
Distributed by WHITTAKER CLARK & DANIELS, INC.
260 West Broadway • New York 13, N. Y. • "The Talc House"

TIRE MOLDS
SPECIAL MACHINERY
TEAR TEST EQUIPMENT

fair prices
reliable delivery
good workmanship

your inquiries are solicited

THE AKRON EQUIPMENT CO.
AKRON 9, OHIO

ELASTOMERS

As the bud of one species of plant can be grafted to the stock of a similar species, so the synthetic molecules are joined to the polyisoprene molecules of natural rubber to form new elastomers of improved properties.

No longer need rubber plod along in tortoise fashion with old loads of uneven quality and predictability. For utilization of NEW POLYMERS in solving your problems, and for additional information on rubber and rubber products, phone or write

Norman L. Hewitt, Rubber Technologist

Foster D. Snell, Inc.
RESEARCH LABORATORIES
CHEMISTS • ENGINEERS
29 W. 15th St., New York 11, N. Y.
WA 4-8800

BOOKLETS, CATALOGS, etc.

Rubber Rolls. Rodney Hunt Machine Co., Orange, Mass. 8 x 10½ in. 60 pp.

This handbook answers the need for a comprehensive, authoritative treatise on rubber rolls. It contains complete, up-to-date information concerning every phase of roll manufacture, characteristic, application, operation, and maintenance. The handbook is illustrated with 34 photographs, drawings and graphs, plus four tables of data. Some of the illustrations show roll manufacturing and test equipment, how rolls are built up with calendered rubber sheets, bound with nylon tape, vulcanized, then ground to finished shape and size. Other photographs show rubber rolls in use in the paper, textile, plastic and printing industries. Line drawings and graphs illustrate many of the technical aspects of rubber rolls including: effect of rubber thickness on nip width and distribution of pressure; effect of linear pressure on width of nip, and pressure per square inch at different points throughout the nip; effect of concentration of load; effect of rubber density on pressure; effect of diameter on width of nip and distribution of pressure, and effect of deflection. One of the tables in the handbook contains a summary of rubber roll troubles and suggestions for treatment. The handbook is available free to roll users. Copies are available to others for $2.00.

•

The Story of the Chemicals You Live By. Diamond Alkali Co., 300 Union Commerce Bldg., Cleveland 14, Ohio. 5¼ x 8¼ in. 28 pp.

With the important contributions which Diamond chemicals make to building a better America through chemical progress as its theme, this newly revised and enlarged booklet paints in broad strokes a panoramic picture of these basic materials, their principal applications and their production in a way that is interesting and informative to both technical and non-technical readers. Liberally illustrated, the booklet narrates the story of how Diamond's "chemicals you live by" are essential to everyone's everyday existence, either as ingredients of countless end products or through their specific functions in assisting the production or processing of these articles. Products or product-groups discussed briefly are soda ash, caustic soda, chlorinated methanes, bicarbonate of soda, sodium silicates, calcium carbonates, chromates, specialized chemicals, organic chemicals, plastics and agricultural chemicals. Pictorial supplements devoted to Diamond plants on parade and a few random glimpses behind the scenes in making the company's products conclude the presentation.

•

Elmes Hydrolairs: Small, Low Cost Air-Powered Hydraulic Presses. (Bulletin 1036-B). Elmes Engineering Division, American Steel Foundries, 1150 Tennessee Avenue, Cincinnati 29, Ohio. 8½ x 11 in. 8 pp.

This illustrated bulletin gives a complete description and specifications on Elmes Hydrolairs, small hydraulic production presses powered solely by compressed air. The text includes full dimensional and operational data, tonnage capacities, and specifications on electric and steam heated hot plates. Among the uses listed for the unit are plastics and rubber molding, assembly, forming, laminating and compacting.

•

Tubeless Automobile Tires: Mounting, Demounting and Repairing. Rubber Manufacturers Association, Inc., 444 Madison Avenue, New York 22, N. Y. 8½ x 11 in. 8 pp.

This new booklet describes and illustrates how to mount and demount tubeless tires, with particular emphasis on proper preparation of rims. Other points covered include installation of the valve, inflating tubeless tires, and repairing tubeless tires. Individual copies of the booklet may be secured from the Association.

The Thiazole Accelerators: MBT and MBTS. (Rubber Chemicals Technical Bulletin No. 839). Intermediate and Rubber Chemicals Department, American Cyanamid Co., Bound Brook, N. J. 8½ x 11 in. 32 pp.

Within a comparatively few years after its commercial introduction in 1925, MBT was being used in greater volume than any other single accelerator. However, for many types of rubber compositions, MBT did not give the desired processing safety or freedom from scorching. MBTS, a derivative of MBT which has more processing safety than MBT, in the last 20-25 years gradually replaced MBT in many applications. The properties and uses of MBT and MBTS are well-known to most compounders in the rubber industry. The information and data contained in this booklet, therefore, are not a presentation of new processing ideas. This bulletin should, however, be useful as an easy reference for newly established chemists as well as for experienced technologists.

•

Man-Made Rubber and the Men Who Made It. By William S. Richardson. B. F. Goodrich Co., Akron, Ohio. 3¾ x 7 in. 28 pp.

In this interesting booklet, the author, president of the B. F. Goodrich Co., traces the progress of synthetic rubber during the past twenty-five years. While not intended to be a complete history, the booklet opens with the efforts of American chemists to produce man-made rubber nearly fifty years ago and covers the remarkable accomplishments in this field since then. The behind-the-scene efforts to establist the rubber-making facilities in this country in time to avoid disaster during World War II are dealt wtih step-by-step. In the author's opinion, American competitive enterprise, the government's stockpiling and synthetic rubber programs, "and the cooperation of millions of American citizens in the conservation of rubber won America's victory in rubber."

•

Some Recent Concepts in the Colloid Chemistry of Carbon Black and Its Reinforcement of Rubber. (Bulletin P-11). By M. L. Studebaker, Philblack Sales Division, Phillips Chemical Co., Akron, Ohio. 8½ x 11 in. 12 pp.

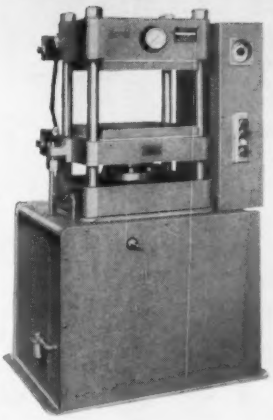
This report first appeared in *Kautschuk und Gummi* and because of its general interest has been made available in reprint form in English. In this paper, the author discusses some of the less thoroughly treated properties of carbon blacks, namely, their oxygen and hydrogen contents. Also discussed are the physical forces of interaction between the carbon black particles with each other, and between rubber and carbon black. The general topics discussed include the ultimate composition and properties of carbon blacks; the physical forces which are important in the reinforcement of rubber by carbon black, and some applications to the reinforcement of rubber.

•

New Instrument for the Measurement of Hardness. By Steffano Oberto. Pirelli, S. A., Milan, Italy. 8½ x 11 in. 20 pp.

This report indicates the characteristics of an instrument devised in the Pirelli laboratories for testing rubber hardness. The apparatus complies with the requirements for testing hardness in international degrees, according to plans developed by ISO/TC-45, the principal features of which are summarized. The usefulness of a hardness test in evaluating shear modulus is described. Also described is the best way of taking into account viscoelastic effects. A microdurometer for testing hardness with the same units, used when the thickness of the rubber is of the order of one millimeter, is also described. The report is published in Italian, with resumes furnished in English, French and German.

Over 500 *Hydrolairs*...
NOW BEING USED BY RUBBER AND PLASTICS MOLDERS!



LOWEST Cost Production Presses to Buy ... to Use

Low-cost Elmes Hydrolairs® are amazingly economical! Check these outstanding advantages:

- Powered by your shop air line, using "Powerpetuator"® —Elmes exclusive patented air-hydraulic intensifier.
- Air requirements negligible.
- Adjustable pressure and speeds.
- Pressure maintained throughout cure, with no power consumption.
- Small, compact — easy to install and move about.

Hydrolairs are made in 30, 50, and 75-ton models, with either electric (illustrated) or hand lever control. Designed and built to Elmes big-press quality standards. Unmatched for low cost, big profit production.

Get the Facts!
Write today for illustrated bulletin giving complete description and specifications on Elmes Hydrolairs. Ask for Bulletin 1036-A.

AMERICAN STEEL FOUNDRIES - ELMES ENGINEERING DIVISION
1172 TENNESSEE AVENUE, CINCINNATI 29, OHIO

The Navigator uses the Compass to know where he's going

The Rubber Executive uses RUBBER AGE for the same reason it's the tool of his profession!

Arrange for your subscription today.
Only $5.00 per year (U.S.A.).
Send off the coupon *now*.

Please enter my subscription to RUBBER AGE for one year starting with the next issue.
☐ Check enclosed ☐ Bill me
Name _____
Title _____
Company _____
Street _____
City and State _____
Please check whether address is:
☐ Company or ☐ Home

MARKETS NEWS-PRICES

NEW YORK, JUNE 6, 1955

Natural Rubber

Since our last report (May 6), the average price of spot rubber on the New York Commodity Exchange has moved in a range of 188 points, high for the period being 33.00c reached on June 6, and low being 31.12c reached on May 11 and again on May 12. The average price of spot rubber for the month of May was 31.35c based on 21 trading days. This compares with an average of 31.75c in May.

According to reports from London, Russian agents are buying heavy tonnages of natural rubber for the Soviet Union for the first time in more than two years. Russian orders placed recently on Europe's biggest rubber exchanges so far total about 15,000 tons for delivery during the next eight to twelve weeks. The quantity involved is said to be more than 30 times more rubber than the Russians imported during all of 1954, according to the International Rubber Study Group, and represents resumption of Soviet buying not matched since 1952.

Bracing Market Effect

Some British and Dutch traders are welcoming Russia's renewed interest in rubber because of the bracing effect on the market. But to the more politically-minded observers in London and on the Continent, the Soviet's latest move is providing another sharp insight into the convolutions of Russia's economy. It also points up an increased heavy industry and armament program being put into effect.

From the end of World War II up until Stalin died on March 5, 1953, the Russians were importing rubber at an annual rate of about 84,000 tons. With Stalin's death, the Soviet economy shifted from heavy industry. Soviet rubber imports that added up to 123,000 tons in 1952 dwindled to 41,800 tons in 1953 and plunged to a mere 425 tons last year.

During this period, the Russians placed greater reliance on their synthetic rubber industry, that can turn out about 250,000 tons annually, according to the International Rubber Study Group. The Soviet also forced her satellites to buy rubber and turn it over. During November, 1953, for example, Hungary suddenly bought 15,000 tons of rubber, an amount that exceeded by 5,000 tons its purchases during the entire prior three-year period.

Gets Rubber from Chinese

There is even evidence that Russia managed to obtain quite a few thousand tons of natural rubber from Red China in 1953 and 1954. Red China started receiving heavy shipments of natural rubber in 1953 in a five-year barter arrangement with Ceylon. The Ceylonese agreed to exchange annually 50,000 metric tons of sheet rubber for 275,000 tons of Chinese rice.

According to military reports from Formosa, the Red Chinese agreed to ship 45% of the Ceylonese rubber to Russia in exchange for technical assistance in developing Red China's northwestern oil industry.

Price Data

Closing Rubber Prices on New York Commodity Exchange (No. 1 R.S.S. Contract)
FROM MAY 7 TO JUNE 6

May	Spot	July	Sept.	Dec.	Mar.	Sales
7	....	....	....	....	....	....
8	....	....	....	....	....	....
9	31.50	31.60	31.20	30.85	30.55	80
10	31.50	31.60	31.28	30.85	30.55	137
11	31.12	31.10	30.80	30.50	30.25	143
12	31.12	31.20	30.90	30.50	30.25	37
13	31.50	31.70	31.45	31.05	30.75	194
14	....	....	....	....	....	....
15	....	....	....	....	....	....
16	31.25	31.40	31.10	30.76	30.45	20
17	31.50	31.55	31.35	31.00	30.60	96
18	31.25	31.35	31.10	30.85	30.50	126
19	31.25	31.45	31.25	30.90	30.55	128
20	31.38	31.40	31.25	30.90	30.50	36
21	....	....	....	....	....	....
22	....	....	....	....	....	....
23	31.25	31.25	31.05	30.65	30.35	34
24	31.25	31.30	31.10	30.75	30.45	98
25	31.62	31.70	31.50	31.20	30.80	97
26	31.88	31.90	31.70	31.40	31.00	153
27	31.88	31.85	31.60	31.25	30.90	71
28	....	....	....	....	....	....
29	....	....	....	....	....	....
30	....	....	....	....	....	....
31	31.75	31.85	31.60	31.30	30.85	51
June						
1	31.88	32.10	31.80	31.55	31.10	179
2	31.75	31.90	31.75	31.39	30.95	207
3	32.12	32.34	32.15	31.82	31.40	188
4	....	....	....	....	....	....
5	....	....	....	....	....	....
6	33.00	33.20	32.93	32.60	32.25	360

Outside Market

No. 1 Ribbed Smoked Sheets:	
Spot	.33
June	.33
July	.33
Thin Latex Crepe:	
Spot	.35¼
Thin Brown Crepe, No. 2	.30¼
Flat Bark Crepe	.27

London Market
(Standard Smoked Sheets)

July-Sept.	33.46 - 33.60
Oct.-Dec.	32.15 - 32.30

Singapore Market
(Standard Smoked Sheets)

July	30.91 - 31.02

Specialty Synthetic Rubbers
(Dry Types—Per Pound)

Butaprene NF	.490 - .500
Butaprene NL	.500 - .510
Butaprene NAA	.540 - .550
Butaprene NXM	.580 - .590
Chemigum 30N4NS	.500 - .510
Chemigum 50N4NS	.500 - .510
Chemigum N3	.580 - .590
G-E Silicone Rubber (compounded)	2.50 -3.60
G-E Silicone Gum (not compounded)	4.00 -4.20
Hycar OR-15	.580 - .590
Hycar OR-25	.500 - .510
Hycar OS-10	.550 - .560
Neoprene Types AC and CG	—— - .550
Neoprene Type GN	—— - .410
Neoprene Type GN-A	—— - .410
Neoprene Type GRT	—— - .420
Neoprene Type KNR	—— - .750
Neoprene Type S	—— - .420
Neoprene Type W	—— - .390
Neoprene Type WRT	—— - .450
Paracril B	.500 - .510
Paracril BJ	.500 - .510
Paracril C	.580 - .590
Polysar "S" Types	—— - .230
Polysar Butyl Types	—— - .230
Polysar Krynol	—— - .189
Polysar Krynol NS	—— - .194
Polysar Krynac	.500 - .510
Polysar Krynac 801	.580 - .590
Polysar SS-250-K	.300 - .310
Silastic (compounded)	1.95 - .338
Thiokol Type A	—— - .470
Thiokol Type FA	—— - .640
Thiokol PR-1	—— - .950
Thiokol Type ST	—— -1.000

Middling Upland Quotations

	May 6	June 6		
	Close	High	Low	Close
July	34.08	33.95	33.81	33.82
Oct.	34.11	34.05	33.94	33.97
Dec.	34.07	34.11	34.00	34.00

Synthetic Rubber

The Rubber Manufacturers Association reports that in the first four months of the current year, 284,484 long tons of all types of synthetic rubber were consumed in the United States. This is 36% more than the 209,180 long tons consumed in the first four months of 1954.

In the first four months of this year, 235,306 long tons of general purpose types were consumed, contrasted with the 160,856 long tons consumed in the first four months of the previous year. The RMA figures show that 23,466 long tons of neoprene were consumed in the first four months of 1955, a gain of about 4,000 long tons over the comparable figure for 1954. Consumption of nitrile rubber was also running ahead, with 7,756 long tons in the first four months of 1955 as against 5,484 in the first four months of 1954.

Only consumption of Butyl rubber fell behind with 17,956 long tons being used in the first four months of 1955. In the comparable period of the preceding year, about 6,000 long tons more were consumed.

Big Demand Predicted

The rising rate of consumption of synthetic rubber is expected to hold not only for the balance of the current year but, according to some quarters, for the next four or five years. The Business and Defense Services Administration of the U. S. Department of Commerce, for example, recently stated that synthetic rubber output must be stepped up to approximately 1,240,000 long tons a year to keep pace with world needs for new rubber. BDSA estimates that the industry in this country has a total capacity of 925,000 long tons annually. Foreign capacity, outside of the Soviet orbit countries, is estimated at about 100,000 tons annually.

BDSA further estimates that by 1959 annual world requirements for new rubber will be in the neighborhood of 3,100,000 long tons. About 1,860,000 long tons of the total requirements will be met by natural rubber, BDSA states, leaving the balance to synthetic.

Taking the BDSA figure of 925,000 long tons of present total synthetic rubber capacity, plant capacity for the production of some 300,000 long tons of synthetic rubber will have to be constructed by 1959.

Present Expansion Plans

It has been estimated that expansion plans by U. S. producers of synthetic rubber in the next five years will involve expenditures in the range of $200,000,000 to $300,000,000. Immediate plans, however, call for only modest outlays, these being aimed largely at modest improvement or modernization of existing facilities.

If demand warrants, it can safely be assumed that during the next five years additional facilities will be constructed in the United States to take care of a major portion of the expanded requirements. Some measure of the greater demand will also be met by countries on the Continent, many of which have recently announced plans for the construction of facilities for the production of different types of synthetic.

All of these suppositions, of course, preclude the outbreak of a general war or even of a startling technological development. It is held by some that technological advances during the next few years may cause a reappraisal of the entire supply-demand situation, in which event there will be new and different problems confronting the industry.

CROWN CLAY

SOUTHEASTERN CLAY CO.
AIKEN, SOUTH CAROLINA

Sales Agents
HERRON BROS. & MEYER.....Akron
HERRON BROS. & MEYER.....New York
C. M. BALDWIN.....Chicago
ERNEST JACOBY & CO.....Boston
The C. P. HALL CO. of Calif. .....Los Angeles
The PIGMENT & CHEMICAL CO. Ltd. ..Toronto

Thomaston TEXTILES for the RUBBER INDUSTRY

specifically engineered to meet your needs

TIRE FABRICS
HOSE AND BELT DUCKS
CHAFERS
YARNS • THREADS • CORDAGE
SHEETINGS • COATING
FABRICS • DIVERSIFIED
COTTON FABRICS

DEPENDABLE THOMASTON Fabrics SINCE 1900

We invite your inquiries

Thomaston Mills

THOMASTON, GEORGIA • NEW YORK OFFICE: 40 WORTH STREET
AKRON, OHIO OFFICE, 308 AKRON SAVINGS AND LOAN BUILDING

GENERAL LATEX
importers and compounders
GENERAL LATEX & CHEMICAL CORPORATION
666 Main Street, Cambridge 39, Mass.
GENERAL LATEX & CHEMICAL CORPORATION (OF OHIO) Ashland, Ohio
GENERAL LATEX & CHEMICAL COMPANY (OF GA.) 1206 Lamar Street, Dalton, Georgia
GENERAL LATEX & CHEMICALS (CANADA) LTD. 425 River Street, Verdun, Montreal, Canada
representatives in principal cities

FACILITIES REPORT

COMPOUNDING FACILITIES

General Latex operates four large compounding plants at Cambridge, Mass., Ashland, Ohio, Dalton, Ga., and Montreal, Canada. Each plant has a fully integrated staff, research and development laboratory, and complete facilities for compounding rubber latices.

SHIPPING AND STORAGE

With the most modern pumping and storage facilities at Boston, Baltimore and Montreal, natural latex customers can be serviced expeditiously from any of these three ports. GR-S is distributed from each of the company's manufacturing locations.

SOURCES OF SUPPLY

General Latex is the largest independent importer of *natural latex* in the U. S. As exclusive agents for Harrisons & Crosfield, Ltd., Malayan latex you are assured of the finest quality latex, both normal and centrifuged.

General Latex has been appointed sales agent in the U. S. for Goodyear's *GR-S latices* produced in their Akron plant. This association will continue to make available to consumers the same services General Latex has performed since the inception of the government synthetic rubber program.

We believe our facilities provide the broadest, most complete service available to users of natural and synthetic latices, and compounds. Your inquiry to any of our plants will receive prompt attention.

MARKETS

NEWS-PRICES

NEW YORK, JUNE 6, 1955

Reclaimed Rubber

Reports from the trade indicate a good level of business activity during the past period with most plants operating on full schedules. The season has now arrived where most reclaimers have already announced plans for a vacation shutdown. In most cases this shutdown will extend for a two-week period.

Preliminary figures released by the U. S. Department of Commerce indicate that in the first three months of this year, 80,116 long tons of reclaimed rubber were produced in the United States. This is almost 16,000 long tons more than were produced in the first three months of the preceding year.

The Commerce Department estimates that 78,340 long tons of reclaim were consumed in the first quarter of this year, contrasted with the 61,437 long tons consumed in the first quarter of 1954. As of March 31, 1955, there were 30,069 long tons of reclaim in stocks on hand. Current prices follow:

(Prices for All Areas Except Calif.)

	per lb.
Premium Grade Whole Tire	.10½
First Line Whole Tire	.10
Second Line Whole Tire	.09½
Third Line Whole Tire	.09¼
Fourth Line Whole Tire	.08¼
Black Carcass	.14¼
No. 1 Light Colored Carcass	.20¾
No. 1 Select Peel	.11¾
No. 1 Peel	.10½
Butyl Tube Reclaim	.15
Natural Rubber Black Tube	.15
Natural Rubber Red Tube	.21
Natural Rubber Gray Tube	.21

Scrap Rubber

Slightly more activity has been reported in the scrap rubber market during the past period. Indications are that June orders were slightly larger than in the preceding month but, as one dealer put it, "nothing to get excited about."

June orders largely revolved around shipments of mixed automobile tires. An increase in Butyl tube activity has been noted during the past few weeks, particularly at Eastern points. Prices remain stable with few changes reported.

According to the latest statistics released by the U. S. Department of Commerce, imports of scrap rubber in January of this year totaled 2,088,703 pounds valued at $117,514. In December of 1954, scrap rubber imports totaled 2,225,107 pounds valued at $106,498, and in January, 1954, scrap imports totaled 2,228,612 pounds valued at $76,380. Current prices follow:

(Prices Delivered Akron)

Mixed tires	ton	15.00
Light colored carcass	lb.	.05½
No. 1 peelings	ton	45.00
No. 2 peelings	ton	30.00
No. 3 peelings	ton	24.00
Buffings	ton	17.00
Truck and Bus S.A.G.	ton	17.00
Passenger S.A.G.	ton	15.00
Natural Rubber Red Tubes	lb.	.07½
Natural Rubber Black Tubes	lb.	.05¾
Butyl Rubber Tubes	lb.	.06½

Tire Fabrics

Heightened demand for automobile and truck tires is reported to be putting a strain on rayon tire yarn production facilities. It is estimated that about nine out of every ten tires produced in the United States contain rayon cord. Sales officials of American Viscose, DuPont, American Enka, Beaunit Mills and Industrial Rayon, major producers of rayon cord, expect that the industry will operate at capacity through June.

If this situation continues, these five companies will probably turn out considerably more rayon yarn in the current quarter than the 100,300,000 pounds produced in the first quarter of this year. The output rate climbed steeply in March, to 37,400,000 pounds from the 30,900,000 produced in February. It is estimated that April production equaled March.

Successive Gains Reported

Should these expectations materialize, the second quarter of 1955 will be the third quarter in succession that production and sales of tire yarn will have scored a gain over the preceding quarter. These gains reflect the fact that automobile production is running nearly 30% ahead of the pace last year.

Even more significant for the yarn producers, however, is the sudden surge in truck production, following the first quarter slow-down due to model change-overs. In the first four months of this year, truck output amounted to about 384,000 units, up barely 1% over a year ago. In the final week of April, however, truck output was running at about 34% ahead of the corresponding week in 1954.

Trucks are said to use about one-half of the tire cord consumed in the United States. Therefore, rayon producers believe that rising demand for original equipment trucks will tend to prolong the market for tire yarn.

Increased Profits

Increased activity in the tire yarn market has caused impressive gains in sales and profits for most producers. A sampling of first quarter reports shows that American Viscose's sales were up 30%, with net income for the first quarter equaling $1.39 a share, four times the first quarter of last year.

American Enka's sales in the first quarter rose to $15,400,000 from $13,600,000 in the first quarter of 1954, and its net increased 34%. Industrial Rayon had sales of $22,300,000 in the first quarter of 1955, up from less than $17,000,000 in the first quarter of 1954, and net income rose to $1.48 a share from $1.07 in the first quarter of the preceding year.

(Prices f.o.b. Shipping Point)

Rayon Tire Cord

1100	lb.	.76½
1650	lb.	.73½
2200	lb.	.73

Nylon Tire Cord

210	lb.	2.00
840	lb.	2.00

Rayon Graded Fabric

1100	lb.	.72
1650	lb.	.69½
2200	lb.	.68½

Cotton Chafers

14.4 oz. (per square yard)	lb.	.71
9.25 oz. (per square yard)	lb.	.66½
11.65 oz. (per square yard)	lb.	.62
8.9 oz. (per square yard)	lb.	.68

Liquid Latex

Natural: According to Latex & Rubber, Inc., U. S. latex markets are presently characterized by watching and waiting on the part of consumers, importers and producers. It is expected that a high level of consumption will continue into July, or until vacation shutdowns interrupt.

The supply situation at the moment is far from clear. It is felt that imports are fairly well in balance with consumption. Stocks, however, are so low, that it will take many months in which imports are greater than consumption to restore inventories to safe levels.

During May, prices for A.S.T.M. Centrifuged Concentrate Hevea latex fluctuated in a very narrow range. Tank car quantities, f.o.b. rail cars, East Coast port, "spot" and/or "nearby" were quoted between 40⅜ and 41½c per pound solids. July onward deliveries ranged from 39½ to 41c.

Synthetic: Information obtained to date from purchasers of the government synthetic rubber facilities indicates that production of only two types of hot latex is planned under private ownership. Shell Chemical has announced plans to produce two hot latices similar to GR-S 2000 and GR-S 2004.

Three producers have announced plans to produce cold latices. Copolymer, Goodyear and Shell Chemical will turn out latices similar to GR-S 2101. Copolymer alone will be producing GR-S 2102, and Goodyear alone will be producing GR-S 2104. Both Copolymer and Goodyear will produce GR-S 2105 and X-765.

It would seem from the foregoing that a reduction of types is going into effect and this, of course, has been more or less expected by the trade.

Cotton

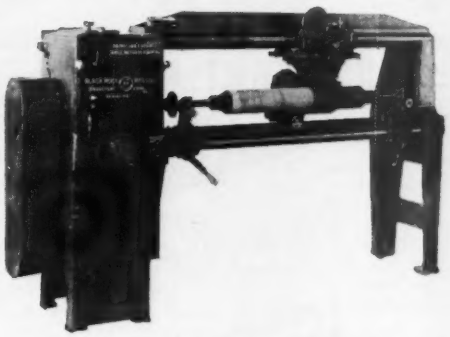
The price of middling uplands on the New York Cotton Exchange has moved in the rather narrow range of 50 points since our last report, high being 35.10c reached on May 9, and low being 34.60c reached on June 1. The average price of middling uplands for the month of May was 34.80c based on 21 trading days. This compares with an average of 34.23c in April.

The New York Cotton Exchange Service Bureau reports that exports of raw cotton from the beginning of the current season through May 3rd amounted to 3,023,900 bales, or 9% more than the 2,779,800 bales exported in the same period one year ago. The Department of Agriculture has reduced its estimate of full-season exports to 4,250,000 bales from the earlier estimate of 4,500,000 bales.

Even the lower figure, however, would represent a substantial improvement over the exports for the two previous seasons and would make 1954-55 the best season for exports since 1951-52, when 5,515,000 bales of the staple were shipped overseas.

Cotton, through a series of circumstances largely attributable to the U. S., is taking a dominant position in the economies of Mexico and most of Central America. The 1954-55 crop for Mexico and the four Central American cotton producing countries amounted to 2,118,326 bales as compared with 1,400,872 bales for the 1953-54 crop. It is conservatively estimated that the 1955-56 crop will be considerably higher than in the preceding year, with some estimates ranging from one-third to one-half again as high.

A Dual Purpose Machine
For Grinding and Polishing



RUBBER ROLLER AND TUBE GRINDING & POLISHING MACHINE (4-LM)

Wide and flexible range of speeds and feeds insure profitable production grinding and polishing of tubes and medium size rollers.

FINE BR TOOLS

BLACK ROCK MFG. CO.
179 Osborne Street Bridgeport 5, Conn.

BROCKTON
CUTTING DIES

Meticulous workmanship has been a tradition at Brockton Cutting Die for three generations. That's why rubber manufacturers turn to us for quality dies of all kinds . . . for dies that really retain their cutting edge. Our experience and facilities enable us to turn out a cutting die for every type of service.

Send your blueprint today for prompt quotation.

BROCKTON CUTTING DIE & MACHINE CO. INC.
CUTTING AND PERFORATING DIES

AVON, MASS.

Factice
THE STAMFORD RUBBER SUPPLY CO
Vulcanized Oil

THE STAMFORD RUBBER SUPPLY CO.

"FACTICE"®
Complete LINE OF
WHITE
BROWN
and AMBER
GRADES

OLDEST AND LARGEST MANUFACTURERS OF "FACTICE" BRAND VULCANIZED OIL SINCE 1900

LEADERS IN THE FIELD
For
RESEARCH and
MANUFACTURING
DEPENDABILITY

THE STAMFORD RUBBER SUPPLY COMPANY, STAMFORD, CONN.

CURRENT MARKET PRICES

of rubber chemicals and compounding ingredients

JUNE 6, 1955

Prices are, in general, f.o.b. works and cover the domestic markets only. Export prices, as a rule, are usually slightly higher, due to packing regulations, special handling, etc.

Abbreviations: bbls., barrels; c.l., carload; cyl., cylinder; dlvd., delivered; dms., drums; eqld., equalized; l.c.l., less than carload; M.B. masterbatch; min., minimum; ref., refined; sap., saponified; sp., special; syn., synthetic; t.c., tank cars.

*Trademark. †For Export Only.

The arrangement of this section closely follows the Chemical Section of the 1953-54 RUBBER RED BOOK. Readers are referred to that edition for the correct classification of any material or brand name. Suppliers of every material are contacted for price information. However, only those materials are listed for which quotations have been furnished within the past six months. The quotations are not guaranteed and prospective purchasers should contact suppliers for information. Suppliers are requested to send current price information to the Market Editor, RUBBER AGE.

ACCELERATORS

A-1 (Thiocarbanilide)*	lb.	.50	.57
A-32*	lb.	.66	.80
A-100*	lb.	.52	.66
Accelerator No. 8*	lb.	——	1.10
Accelerator—49*	lb.	.53	.54
Accelerator 108*	lb.	——	.89
Accelerator—552*	lb.	——	2.25
Accelerator—808*	lb.	.66	.68
Accelerator—833*	lb.	1.17	1.19
Accelerator B*	lb.	——	.89
Altax*	lb.	.48	.50
Ancap*(†)	lb.	.38	.40
Ancatax*(†)	lb.	.48	.50
Ancazate BU (ET & ME)*(†)	lb.	——	1.04
Ancazide ET*(†)	lb.	——	1.04
ME*(†)	lb.	——	1.14
Arazate*	lb.	——	2.25
Beutene*	lb.	.66	.68
Bismate, Rodform*	lb.	——	3.00
Butazate*	lb.	——	1.04
Butyl Accelerator 21*	lb.	——	.89
Butyl Eight*	lb.	1.10	1.35
Captax*	lb.	.38	.40
C-P-B*	lb.	——	1.95
Cumate, Rodform*	lb.	——	1.45
Dibenzo G-M-F*	lb.	——	2.60
Diorthotolylguanidine	lb.	.57	.58
Diphenylguanidine	lb.	.48	.49
El-Sixty*	lb.	.58	.65
Ethazate*	lb.	——	1.04
50D*	lb.	——	.85
Ethyl Thiurad*	lb.	——	1.04
Ethyl Tuex*	lb.	——	1.04
Ethylac*	lb.	.93	.95
G-M-F*	lb.	——	2.60
Guantal*	lb.	.57	.64
Harvex*	lb.	.62	.68
Hepteen Base*	lb.	——	1.85
Kure-Blend MT*	lb.	——	.70
Ledate, Rodform*	lb.	——	1.04
MBT-XXX*	lb.	.49	.51
Merac*	gal.	.75	1.05
Mercaptobenzothiazole	lb.	.38	.40
Mercaptobenzothiazyl Disulfide	lb.	.48	.50
Mertax*	lb.	.49	.56
Methazate*	lb.	——	1.04
Monex*	lb.	——	1.14
Mono Thiurad*	lb.	——	1.14
Morfex*	lb.	.65	.67
2-MT	lb.	——	1.00
NA-22* (for neoprene)	lb.	——	1.20
NOBS No. 1*	lb.	.69	.71
Special*	lb.	.74	.76
O-X-A-F	lb.	.49	.51
Pentex*	lb.	——	1.04
Flour*	lb.	——	.21
Phenex*	lb.	.52	.57
Polyac*	lb.	——	1.80
R-2 Crystals*	lb.	——	4.35
Rotax*	lb.	.49	.51
RZ-50-A*	lb.	——	1.00
B*	lb.	——	1.00
SA 52*	lb.	——	1.14
SA 57*	lb.	——	1.04
SA 62*	lb.	——	1.04
SA 66*	lb.	——	2.75
SA 67*	lb.	——	1.04
SA 77*	lb.	——	1.04
Santocure*	lb.	.69	.76
Selenac* (Ethyl, Methyl)	lb.	——	2.75
Setsit-5*	lb.	.75	1.05
9*	lb.	.85	1.15
SPDX-GH*	lb.	.69	.71
GL*	lb.	1.20	1.30
Tellurac*	lb.	——	1.45
Tepidone*	lb.	.45	.48
Tetrone A*	lb.	——	1.91
Thiofide*	lb.	.48	.55
S*	lb.	.50	.57
Thionex*	lb.	——	1.14
Thiotax*	lb.	.38	.45
Thiurad*	lb.	——	1.14
Thiuram E*	lb.	——	1.04
M*	lb.	——	1.14
Trimene*	lb.	.56	.58
Base*	lb.	1.03	1.06
Tuads* (Ethyl)	lb.	——	1.04
Tuads* (Methyl)	lb.	——	1.14
Tuex*	lb.	——	1.14
Ultex*	lb.	1.00	1.10
Unads*	lb.	——	1.14
Vulcacure NB*	lb.	——	.45
ZB*	lb.	——	.85
ZE*	lb.	——	.85
ZM*	lb.	——	.85
Z-B-X*	lb.	——	2.45
Zenite*	lb.	.48	.50
A*	lb	.57	.59
Zenite Special*	lb.	.49	.51
Zetax* (uncoated)	lb.	.49	.51
Zimate* (Butyl)	lb.	——	1.04
Zimate* (Ethyl)	lb.	——	1.04
Zimate* (Methyl)	lb.	——	1.04

ACTIVATORS

Blue Lead Sublimed (dlvd.)	lb.	.15¾	.16¾
Cottonseed Fatty Acids			
Wochem 210*	lb.	.15¼	.17¼
211*	lb.	.15¼	.17¼
Fish Oil, Hydrogenated, Fatty Acid			
DAR-S* (dlvd.)	lb.	.12	.14
DAR-HY* (dlvd.)	lb.	.13¼	.15¼
Hydrofol Acids* (dlvd.)	lb.	.12	.17¾
Hyfac 430* (dlvd.)	lb.	.15¾	.17¾
Neo-Fat H.F.O.* (dlvd.)	lb.	.14½	.15¾
Neutrax* (dlvd.)	lb.	.14½	.16½
Stearex Beads* (dlvd.)	lb.	.09¾	.10¾
Stearite*	lb.	.12	.14
Talene* (dlvd.)	lb.	.13¼	.15¼
Lime, Hydrated			
Arrowhead*	ton	——	20.50
Marblehead*	ton	——	16.50
Sierra*	ton	——	22.00
Litharge			
Eagle-Picher*	lb.	——	.17
SB* (dlvd.)	lb.	——	.15
Magnesium Oxide, Heavy			
General Magnesite 500*	lb.	.05	.05½
600*	lb.	.06	.07
Michigan No. 15*	lb.	.06	.06½
Permanente MgO*	lb.	.057	.073
Magnesium Oxide, Light			
Baker's* (neoprene grade)	lb.	——	.26
Carey Mag*	lb.	.25¼	.26
General Magnesite* (neoprene grade)	lb.	.29¼	.30
General Magnesite No. 101*	lb.	.25¼	.28

ACTIVATORS (Cont'd)

Magnesium Oxide, Light (cont'd)			
Genmag ML*	lb.	.25¼	.28
195*	lb.	——	.20½
K & M*(neoprene grade)	lb.	.30	.34
Light Calcined Magnesia No. X-01*	lb.	.25¼	.26
Light Carbonate of Magnesia, Technical	lb.	.10½	.12
Maglite D*	lb.	.25¼	.26
M*	lb.	.29¼	.30
Marine's* (neoprene grade) (l.c.l.)	lb.	.29¼	.30
Michigan No. 30*	lb.	——	.26
Neomag Powder*	lb.	.29¼	.30
Pellets*	lb.	.31¼	.32
No. 40 Extra Light*	lb.	——	.30
Oleic Acid			
Emersol 210* (dlvd.)	lb.	.17½	.19½
L.C.P. Red Oil*	lb.	.16½	.18½
Neo-Fat 92-04*	lb.	.18	.19¾
94-04*	lb.	.15½	.17½
Palm Fatty Acids			
Wochem 280*	lb.	.13¾	.14¼
281*	lb.	.14¼	.16¼
Potassium Oleate (dms.)	lb.	.30	.73
Red Lead			
Eagle-Picher*	lb.	——	.18
No. 2 RM* (dlvd.)	lb.	——	.17
Sodium Laurate, 75%	lb.	.64	.89
Sodium Oleate, 75%	lb.	.54	.79
Paste (dms.)	lb.	.39	.64
Sodium Stearate, 75%	lb.	.54	.89
Stearic Acid, Single Pressed			
Emersol 110* (dlvd.)	lb.	.13¾	.15¾
Groco 53*	lb.	.13¾	.15¾
Neo-Fat 18-53*	lb.	.13¾	.14¾
Standard Pearlstearic* (dlvd.)	lb.	.13¾	.15¾
Wochem 730*	lb.	.12	.14
Stearex B* (dlvd.)	lb.	.15½	.16¾
Stearic Acid, Double Pressed			
Choice Pearlstearic* (dlvd.)	lb.	.14½	.16¼
Emersol 120* (dlvd.)	lb.	.14¼	.16¼
Groco 54*	lb.	.14¼	.16¼
Neo-Fat 18-54*	lb.	.14¼	.15¼
Wochem 731*	lb.	.13¼	.15¼
Stearic Acid, Other			
Extra Pearlstearic* (dlvd.)	lb.	.16½	.18½
Neo-Fat 18*	lb.	.17½	.18½
18-58*	lb.	.12	.13
18-61*	lb.	.15¼	.16¼
Wochem 720*	lb.	.11¾	.13¾
721*	lb.	.11½	.13½
732*	lb.	.15½	.17½
White Lead Basic Carbonate	lb.	.17½	.18½
White Lead Basic Sulfate	lb.	.15¾	.16¾
Zinc Laurate			
Laurex*	lb.	.33	.34
Zinc Stearate	lb.	.37	.42
Aquazinc*	lb.	.20	.45
Aquazinc K.C.*	lb.	.30	.55

Unclassified Activators

Actifat* (dms.)	lb.	——	.18
Aktone*	lb.	——	.25
Barak*	lb.	——	.62
Curade*	lb.	.57	.59
D-B-A*	lb.	——	1.95
Dibutylamine (dlvd.)	lb.	.55	.56
MODX*	lb.	.32½	.34½
Ridacto* (dms.)	lb.	.25	.26
Snodotte* (dlvd.)	lb.	.18	.20
Vulklor*	lb.	.88	.98

ANTI-COAGULANTS

Aqua Ammonia* (dms.)	lb.	.031	.035
M.B.M.* (l.c.l.)	lb.	——	.35

ANTI-FOAMING AGENTS

Aero Anti Foam H*	lb.	——	.20
Regular*	lb.	——	.12
D.C. Antifoam A*	lb.	5.45	6.65
Antifoam A Emulsion*	lb.	2.05	4.00
Antifoam AF Emulsion*	lb.	2.05	2.85
Defoama W-1701*	lb.	——	.12½
Defoamer A-25*	lb.	——	3.00
Defoamer 630*	lb.	——	.12½
Deltyl Prime	lb.	.70	.80

SPECIAL INDUSTRIAL
FABRICS
for the
RUBBER INDUSTRY

FLIGHTEX FABRIC
REGISTERED U.S. PAT. OFFICE

• COTTON • DYNEL
• VINYON • ORLON
• GLASS

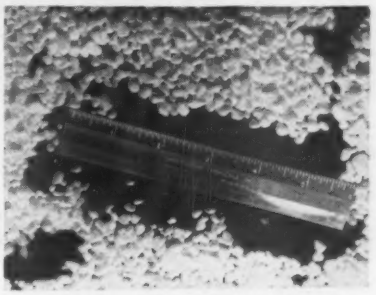
If you use special industrial fabrics you'll find Flightex a dependable source of supply. Our staff of engineers is at your service to help solve your fabric problems.

Write for Complete Information

FLIGHTEX FABRICS, Inc.
93 Worth Street New York 13, N. Y.

To Eliminate Dust
and Cut Costs
IN NEOPRENE COMPOUNDING

Use DCI
"Tested and Proved"
GRANULAR LIGHT
CALCINED MAGNESIA



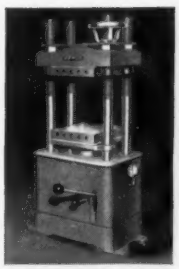
Here is magnesia of the highest quality in granular form —practically dust-free. Each particle is uniform in crystal structure and chemical content. Strict manufacturing standards and quality control are your assurance of the cleanest and finest magnesia with low iron, calcium and manganese oxides content.

Additionally, protective packaging seals out dust and moisture. All of this means you get the important qualities in magnesia for neoprene compounding without paying a premium. Ask for a sample today. Test and you'll know. Write:

DARLINGTON CHEMICALS, INC.
1420 Walnut Street, Philadelphia 2, Pa.

Represented by:
Summit Chemical Co., Akron, Ohio
Tumpeer Chemical Co., Chicago, Ill.

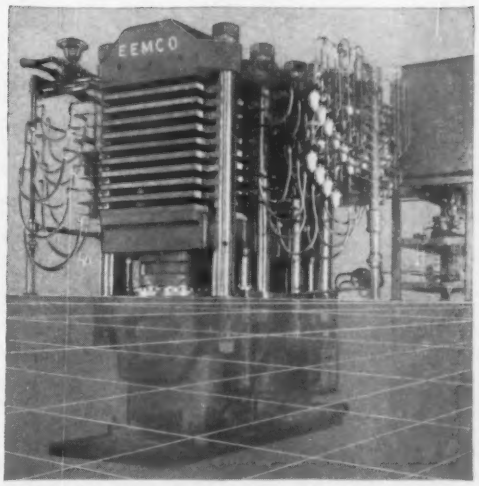
PRESSES...
FROM THE SMALLEST TO THE LARGEST



LABORATORY PRESSES

STANDARD and CUSTOM BUILT
HYDRAULIC PRESSES for...
RUBBER • PLASTICS • METAL WORKING
REINFORCED FIBER GLASS MOLDING

EEMCO builds every size hydraulic press from laboratory sizes up to the largest sizes—for any production requirement. A complete line of standard units is also available. Without obligation ask us to quote on your needs.



LAMINATING PRESSES • SPECIAL PRESSES

EEMCO
ERIE ENGINE & MFG. CO.
12th ST. & EAST AVE., ERIE, PA.

ANTI-FOAMING AGENTS (Cont'd)

Emcol IM*	lb.	——	.60
G-E Antifoam SS-24*	lb.	5.80	6.90
SS-66*	lb.	5.70	6.20
Kessco X-3* (dms.)	lb.	——	.35½
X-180*	lb.	——	.29¾
X-181*	lb.	——	.38½
Nopco 1407*	lb.	.19½	.20½
1497-V*	lb.	.13¾	.14¾
1907-B*	lb.	.18¼	.19¼
JMK*	lb.	.48	.49
JMU*	lb.	.22½	.23½
JMY*	lb.	.19¾	.20¼
Pluronic L61*	lb.	.33½	.39
RS-968*	lb.	.38	.38½
Terpinol Prime No. 1	lb.	.35	.50
Tributyl Phosphate (dms.)	lb.	.52	.53

ANTIOXIDANTS

Agebest 1293-22A*	lb.	1.90	2.00
Agerite Alba*	lb.	2.35	2.45
Gel*	lb.	.64	.66
Hipar*	lb.	.98	1.00
H.P.*	lb.	.72	.74
Powder*	lb.	.52	.54
Resin*	lb.	.75	.77
Resin D*	lb.	.52	.54
Spar*	lb.	.52	.54
Stalite*	lb.	.52	.54
Stalite S*	lb.	.52	.54
White*	lb.	1.45	1.55
Akroflex C*	lb.	.77	.79
CD*	lb.	.72	.74
Aminox*	lb.	.52	.54
Antioxidant 2246*	lb.	1.55	1.58
Antox*	lb.	.52	.54
Aranox*	lb.	——	3.25
Benzoquinone	lb.	1.50	1.75
Betanox Special*	lb.	.80	.82
B-L-E*	lb.	.52	.54
B-X-A*	lb.	.52	.54
Deenax*	lb.	.95	1.05
Di-tert-Butyl-para-Cresol	lb.	.91	.95
Eugenol C-95%*	lb.	2.30	2.50
Flectol H*	lb.	.52	.59
Flexamine*	lb.	.72	.74
Neozone A*	lb.	.56	.58
C*	lb.	——	.80
D*	lb.	.52	.54
Octamine*	lb.	.52	.54
Oxidex*	lb.	——	3.60
PDA-10*	lb.	.46	.48
Permalux*	lb.	——	2.17
Polygard*	lb.	.52	.54
Santoflex AW*	lb.	.78	.85
B*	lb.	.52	.59
BX*	lb.	.63	.70
35*	lb.	.72	.79
Santovar-A*	lb.	1.50	1.57
Santowhite Crystals*	lb.	1.60	1.67
Santowhite L*	lb.	.52	.59
MK*	lb.	1.29	1.36
Powder*	lb.	1.60	1.67
Sequestrene AA*	lb.	——	.97½
NA2*	lb.	——	.79½
NA3*	lb.	——	.77½
Stabilite*	lb.	.55	.57
Alba*	lb.	.72	.77
FLX*	lb.	——	.65
L*	lb.	.60	.62
White*	lb.	.52	.54
White Powder*	lb.	.41	.43
Stabilizer No. 1*	lb.	1.55	1.80
Stabilizer No. 9-A*	lb.	.80	1.05
Styphen I*	lb.	.51	.55
Sunolite*	lb.	.21	.23
Tannic Acid, Tech.	lb.	.46	.48
Thermoflex A*	lb.	.98	1.00
V-G-B*	lb.	.70	.72
Wing-Stay S*	lb.	.51	.52

ANTI-SCORCHING AGENTS

Armeen HT*	lb.	.31	.33
Good-rite Vultrol*	lb.	.62	.64
Harcopol 1183*	lb.	.70	.74
Sodium Acetate 60-62% Crystals	lb.	.08	.08½

ANTISEPTICS AND GERMICIDES

Arquad S*	lb.	.24	.26
Formaldehyde (dms.)	lb.	.052	.068
G-4* (bbls.)	lb.	1.04	1.19
G-11*	lb.	2.20	2.30
Halane*	lb.	.50	.60
Nuodex 100 S.S.* (dlvd.)	lb.	——	1.10
100 W.D.* (dlvd.)	lb.	——	1.25
Zinc 8%* (dms.) (dlvd.)	lb.	.24	.28
Ortho Cresol (26°—27°)	lb.	.14	.156
Retarder D*	lb.	.42	.50
Soligen Drier—Copper 8%* (dms.)	lb.	.20¼	.21½
Zinc 8%* (dms.)	lb.	.22¼	.23½
Vancide*	lb.	——	.80

ANTI-WEBBING AGENTS (for Latex)

DC 7 Compound*	lb.	5.13	6.50
Webnix 34*	lb.	1.50	2.25

AROMATICS (DEODORANTS)

Airkem 115*	gal.	——	6.50
122*	gal.	——	6.50
186*	gal.	——	6.50
Alamask AA*	lb.	——	3.00
AF*	lb.	——	2.50
AO*	lb.	——	1.50
AR*	lb.	——	.50
BG*	lb.	——	1.15
BGM*	lb.	——	.60
CY*	lb.	——	2.40
DJ*	lb.	——	3.35
DL*	lb.	——	1.95
H*	lb.	——	5.50
LD*	lb.	——	.75
ND*	lb.	——	2.75
O*	lb.	——	6.50
OS*	lb.	——	5.25
Bouquet 149*	lb.	——	3.00
Coumarin*	lb.	2.95	3.00
Curodex 19*	lb.	4.75	4.90
188*	lb.	5.75	5.90
198*	lb.	6.75	6.90
Deodorant 65*	lb.	——	1.85
Deodorant L-37*	lb.	2.00	2.40
L-44*	lb.	2.50	2.90
N.L.T.X.*	lb.	1.85	2.15
Deodorant Oil GD 3427*	lb.	1.70	2.00
GD 6422*	lb.	2.00	2.50
GD 6423*	lb.	1.60	1.90
GD 6575*	lb.	2.40	2.90
GD 31063*	lb.	2.25	2.75
Latex Perfume 5*	lb.	——	3.25
6*	lb.	——	7.50
9*	lb.	——	1.25
Naugaromes* (dms.)	lb.	.60	3.00
Neutroleum Delta*	lb.	——	2.60
Gamma*	lb.	——	3.60
Parador A*	lb.	2.00	2.50
C*	lb.	2.75	3.25
E*	lb.	.25	.55
GD 5280*	lb.	2.00	2.50
GD 5348*	lb.	1.90	3.25
Perfume Oil Bouquet Vanilla M*	lb.	2.40	2.75
Rodo No. 0*	lb.	4.00	4.50
No. 10*	lb.	5.00	5.50
Rubbarome* (dms.)	lb.	.60	3.80
Rubber Perfume 12*	lb.	——	4.35
Russian Leather 7*	lb.	——	4.35
Vanillin	lb.	3.00	3.25

BLOWING AGENTS

Ammonium Bicarbonate	cwt.	——	8.00
Better Blend Soda* (c.l., bags)	cwt.	——	2.40
Blowing Agent CP-975*	lb.	.32	.35
Celogen*	lb.	——	1.95
AZ*	lb.	——	1.95
Sodium Bicarbonate, U.S.P. (c.l., bags)	cwt.	——	2.30
Sponge Paste*	lb.	——	.20
Unicel*	lb.	——	.90
ND*	lb.	——	.76
S*	lb.	——	.20
Urea	lb.	.04¼	.04¾

BONDING AGENTS

Braze*	gal.	6.00	9.00
Cover Cement*	gal.	2.50	4.00
Durez 12987*	lb.	——	.54
Gen-Tac Latex*	lb.	.75	.85½
Hylene M*	lb.	3.50	3.75
M-50*	lb.	1.90	2.15
Penacolite B1A*	lb.	——	.95
R-2710*	lb.	——	.95
Pliobond 20*	gal.	2.91	4.23
30*	gal.	3.65	4.97
Rex Compounds*	gal.	1.30	1.90
Thixons*	gal.	3.30	9.00
Ty-Ply Q (BN & S)*	gal.	6.75	8.00
Tygobond 30*	gal.	5.50	7.45

COAGULANTS

Acetic Acid—56% (bbls.)	cwt.	9.00	11.00
Glacial 99½% (dms.)	lb.	.12	.13
Calcium Nitrate, Tech. Crystals	lb.	.12½	.15
Hydroxyacetic Acid—70% (dms.)	lb.	——	.084
Zinc Nitrate, Tech.	lb.	——	.22½

COLORING AGENTS

Black

Aquablak B*	lb.	.09¼	.09¾
M*	lb.	.08½	.09
R*	lb.	.10¾	.11¼
S*	lb.	.11½	.12
Black Shield 4-35* (dms.)	lb.	——	.09
Carbon Black See *Reinforcing Agents*			
Lampblack No. 10*	lb.	.06	.09
Mapico Black Iron Oxide* (50 lb. bags)	lb.	.12¾	.13
Pure Black Iron Oxide	cwt.	12.75	13.00

COLORING AGENTS (Cont'd)

Blue

Blue Powders	lb.	2.30	5.00
Cooke M.B. Blue*	lb.	2.45	2.85
Milori Blue*	lb.	——	.46
Monastral Rubber Blue CPL*	lb.	——	1.95
PCD, Dispersed*	lb.	——	2.20
Peacoline Blue*	lb.	——	3.85
Ramapo Blue*	lb.	——	3.00
Rubber Blue GD* (Disp.)	lb.	——	4.55
Rubber Blue X-1999*	lb.	——	1.70
Rubber Dispersed Blues	lb.	2.52	2.78
Syntheline Blue*	lb.	——	3.85
Stan-Tone MBS*	lb.	1.55	4.55
GPE*	lb.	——	2.50
PC*	lb.	——	2.40
PDS*	lb.	——	2.00
PVC*	lb.	——	2.50
Ultramarine	lb.	.14	.30
Vansul Blue M.B.*	lb.	.90	2.60

Brown

Brown Iron Oxide	lb.	.12¾	.13
Mapico Brown* (50 lb. bags)	lb.	.13¾	.14
Stan-Tone GPE*	lb.	——	3.00
Vansul Brown M.B.* (Organic)	lb.	——	2.10

Green

Cooke M.B. Green*	lb.	1.45	2.80
Filo Green*	lb.	——	.34
Green Chromium Oxide, Pure	lb.	——	.39¾
Green Chromium Oxide, Pure Hydrated	lb.	——	1.10
Green Powders	lb.	1.35	3.95
Monastral Rubber Green GSD* (Dispersed)	lb.	——	2.80
GSL*	lb.	——	2.20
Permansa Green CP-594*	lb.	——	1.35
Pigment Green B*	lb.	——	1.35
GL-652D*	lb.	.80	.90
Ramapo Green*	lb.	——	3.50
Rubber Dispersed Greens	lb.	1.23	3.08
Rubber Green FD* (Disp.)	lb.	——	2.05
Rubber Green X-1292*	lb.	——	1.40
Stan-Tone MBS*	lb.	1.55	3.35
GPE*	lb.	3.00	4.50
PC*	lb.	——	3.00
PDS*	lb.	1.90	2.20
PVC*	lb.	——	3.60
Vansul Green M.B.*	lb.	1.00	2.90

Maroon

Maroon Powders	lb.	.79	3.60
Stan-Tone MBS*	lb.	——	3.50
Vansul Maroon M.B.*	lb.	——	3.25

Orange

Molybdate Orange	lb.	——	.45
Oswego Orange X2065*	lb.	——	3.00
Rubber Orange OD* (Disp.)	lb.	——	2.75
Stan-Tone GPE*	lb.	——	1.20
PC*	lb.	——	1.05
PDS*	lb.	——	1.20
PVC*	lb.	——	1.25
Vansul Orange M.B.*	lb.	2.00	2.50

Red

Antimony Trisulfide	lb.	.72	.78
R.M.P. Sulfur Free*	lb.	——	.78
R.M.P. No. 3*	lb.	——	.72
Cadmolith Red* (bbls.)	lb.	1.79	2.45
Cooke M.B. Red*	lb.	1.00	3.15
Graphic Red (dlvd.)	lb.	——	.79
Indian Red, American, Pure*	lb.	.12¾	.13
Doxco (English)*	lb.	.11½	.11¾
Kroma Reds*	lb.	.13	.15
Mapico Reds* (50 lb. bags)	lb.	.12¾	.13
Oximony Red Iron Oxide	lb.	.12¾	.13
Recco Red Oxide*	lb.	.12	.13
Red Iron Oxide, Light	lb.	.13	.13½
Red Powders	lb.	——	4.40
Rubber Dispersed Reds	lb.	1.47	3.58
Rubber Red PBD* (Disp.)	lb.	——	1.75
2BD, Dispersed*	lb.	——	1.80
2BL*	lb.	——	1.65
PBL*	lb.	——	1.65
Rubanox Red CP-762* (dlvd.)	lb.	——	1.40
Rubber Red CP-339* (dlvd.)	lb.	——	1.10
Rubber Red X-1148*	lb.	——	.85
Solfast Red*	lb.	1.50	1.95
Stan-Tone MBS*	lb.	1.20	3.53
GPE*	lb.	1.65	2.00
PC*	lb.	1.30	2.50
PDS*	lb.	1.40	1.55
PVC*	lb.	1.65	1.90
Sun Burnt Red*	lb.	.11½	.11¾
Vansul Red M.B.*	lb.	1.20	3.20
Watchung Red*	lb.	1.63	1.95

PLYMOUTH STEARATES

ZINC STEARATES
WETTABLE ZINC STEARATE
CALCIUM STEARATES
BARIUM STEARATE
MAGNESIUM STEARATES
ALUMINUM STEARATES

PLYMOUTH BRAND METALLIC SOAPS

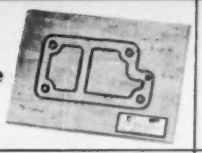
Whether it's Plymouth Zinc Stearate . . . for use as a lubricant or dusting agent . . . or another of the fine Plymouth Brand Stearates . . . you are **always** sure of getting Quality and Uniformity . . . with every shipment.

Write for samples and Data on Plymouth Zinc Stearate #220 — a special "Sponge Rubber" grade.

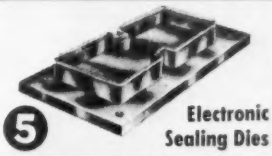
M. W. PARSONS-PLYMOUTH, INC.
59 BEEKMAN STREET, NEW YORK 38, N. Y.
Telephone: BEEKMAN 3-3162—3163—3164 Cable: PARSONOILS, NEW YORK
DISTRIBUTION POINTS AND AGENTS IN ALL PRINCIPAL CITIES

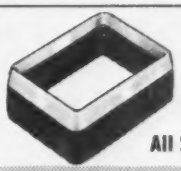
RUBBER FABRICATORS NEED ACCURATE CUTTING DIES
For Cutting
Rubber, Neoprene, Plastics, etc.
Sheeting, Foam, Sponge, Cellular,
Cured & Uncured
Gang Dies Our Specialty

3 Mallet Handle Dies


4 Steel Rule Cutting Dies

2 Steel Rule Clicker Dies


5 Electronic Sealing Dies


1 All Steel Dies

We can also die cut your materials on jobs you don't wish to handle yourself.

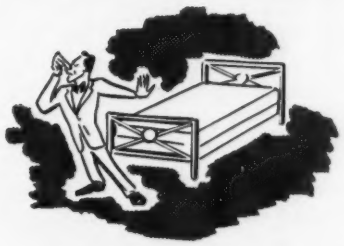
Dies for cutting gaskets, flashing from molded parts, rubber soles, foam and sponge for furniture padding, inflated toys, clothing and footwear, etc.

SAME DAY SERVICE

ACCURATE
STEEL RULE DIE MANUFACTURERS
24-28 W. 21 ST. • N. Y. 10, N. Y. • CHelsea 2-0860-1
Intelligent Service to Industry for Almost a Quarter Century

consider this foam rubber mattress... a good product

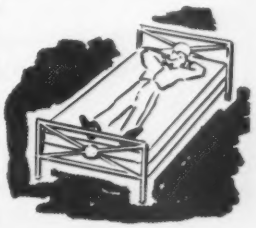
BUT ITS SALES WERE DOWN ! ! !



because of its unpleasant odor

Then its maker discovered that ALAMASK® reodorants mask and modify the obnoxious odor of rubber itself and of the various chemicals used in processing the end product. Buyer resistance was quickly overcome.

Wise rubber goods manufacturers recognize that offensive odors adversely affect sales. ALAMASK reodorants solve the malodor problem, at very little cost, without influencing processing characteristics or rate of cure.



No matter what your rubber product, make it odor-free with ALAMASK, and *watch sales climb.*

ALAMASK reodorants are also effective in controlling malodors caused by stack fumes and plant effluents and can improve olfactory conditions both within and outside your plant.

"ALAMASK" TYPE RECOMMENDED	Latex: Foam	Latex: Sponge	Latex: Dipped Goods	Latex: Bonded Fibers	Latex: Adhesives	Dry Rubber: Natural	Dry Rubber: Synthetic	Dry Rubber: Reclaim	Dry Rubber: Chemically Blown	Elasto-Plastics: Polyvinyl	Elasto-Plastics: Polyuryl	Elasto-Plastics: Plastisols
AA										X	X	X
AF					X		X		X			
AO or AO-X					X	X	X		X			
AR or AR-F			X		X							
BF or BG-X	X	X	X		X	X	X					
BGM or BGM-X	X	X		X		X						
CY					X				X			
DJ	X	X	X				X		X			
DL							X		X			
H			X		X			X	X	X	X	
LD	X	X	X	X	X	X		X				
ND or ND-X	X	X	X	X	X	X	X	X	X	X	X	
O	X	X	X	X		X	X		X	X	X	X
OS or OS-X	X	X	X	X			X					

For use in latex, the water-dispersible "ALAMASK" form is recommended. The water-dispersible forms are designated by "-X" or "-F" following the "ALAMASK" type name.

For complete information on how ALAMASK can lick your rubber malodor problem, write today to Industrial Reodorants Division ("Alamask"), Rhodia, Inc., 230 Park Avenue, New York 17, N. Y.

Rhodia INC.

Canadian Representatives:
Naugatuck Chemical Division
Dominion Rubber, Ltd.

COLORING AGENTS (Cont'd)

Tan

Mapico Tan 15* (50 lb. bags)	lb.	.20¼	- .20½
20* (50 lb. bags)	lb.	.20¼	- .20½

White—Lithopone

Albalith*	lb.	.0750	- .0850
Eagle-Picher*	lb.	.0750	- .0825
Permolith*	lb.	.0750	- .0825
Sunolith*	lb.	.0750	- .0825

White—Titanium Pigments

Ti-Cal*	lb.	.08⅜	- .09⅛
R-25*, R-22*, R-27*, R-30*	lb.	.08⅜	- .08⅞
R-60*	lb.	.08⅝	- .09⅛
Ti-Pure*	lb.	.22½	- .25½
Anatase Grades*	lb.	.22½	- .23½
Rutile Grades*	lb.	.24½	- .25½
Titanox A*—all grades (dlvd.)	lb.	.22½	- .23½
C-50* (dlvd.)	lb.	.12⅞	- .13⅜
RA* (dlvd.)	lb.	.24½	- .25½
RA-10* (dlvd.)	lb.	.24½	- .25½
RA-NC* (dlvd.)	lb.	.24½	- .25½
RC* (dlvd.)	lb.	.08⅝	- .09⅛
RC-HT* (dlvd.)	lb.	.08⅜	- .08⅞
Unitane O-110*	lb.	.22½	- .23½
O-210*	lb.	.22½	- .23½
O-220*	lb.	.22½	- .23½
O-310*	lb.	.22½	- .23½
O-320*	lb.	.22½	- .23½
O-410*	lb.	.22½	- .23½
OR-150*	lb.	.24½	- .25½
OR-250*	lb.	.24½	- .25½
OR-340*	lb.	.24½	- .25½
OR-342*	lb.	.24½	- .25½
OR-350*	lb.	.24½	- .25½
OR-540*	lb.	.24½	- .25½
OR-640*	lb.	.24½	- .25½
Zopaque*	lb.	.22½	- .23½
R*	lb.	.24½	- .25½

White—Zinc Oxide (American Process)

AZO-ZZZ 11* (22*, 33*, 44*, 55* & 66*)	lb.	.1350	- .1450
Eagle-Picher AAA*	lb.	.1400	- .1500
Horse Head Special*	lb.	.1350	- .1450
XX*	lb.	.1350	- .1450
Protox 166*	lb.	.1350	- .1450
167*	lb.	.1350	- .1450
St. Joe Black Label*	lb.	.1400	- .1500
Green Label*	lb.	.1400	- .1500
Red Label*	lb.	.1400	- .1500

White—Zinc Oxide (Dispersed)

Dispersed Zinc Oxide	lb.	——	- .13

White—Zinc Oxide (French Process)

Florence Green Seal*	lb.	.1575	- .1675
Red Seal*	lb.	.1525	- .1625
White Seal*	lb.	.1625	- .1725
Kadox 25*	lb.	.1625	- .1725
15*, 17* & 72*	lb.	.1400	- .1500
Protox 168*	lb.	.1400	- .1500
169*	lb.	.1400	- .1500
U.S.P. (cartons)	lb.	.1725	- .1825

White—Zinc Sulfide

Cryptone ZS*	lb.	.2530	- .2630

Yellow

Benzidine Yellow	lb.	2.00	- 2.25
Cadmolith Yellow* (bbls.)	lb.	1.12	- 1.20
Chrome Yellow	lb.	——	- .32
Cooke M.B. Yellow 405*	lb.	1.90	- 2.00
Iron Oxide, Pure Light Shades	lb.	.11	- .11¼
Dark Shades	lb.	.10½	- .10¾
Mapico Yellow* (50 lb. bags)	lb.	.10½	- .11¼
Rubber Dispersed Yellows	lb.	1.27	- 2.13
Rubber Yellow GD* (disp.)	lb.	——	- 2.15
GL*	lb.	——	- 1.68
Rubber Yellow X-1940*	lb.	——	- 2.25
Stan-Tone MBS*	lb.	1.30	- 4.50
GPE*	lb.	2.00	- 4.50
PC*	lb.	.85	- 4.50
PDS*	lb.	1.25	- 1.75
PVC*	lb.	1.30	- 1.85
Sumatra Yellow X-1940*	lb.	——	- 2.25
Toluidine Yellow YL-660 D*	lb.	1.15	- 1.20
Oximony Iron Oxide	lb.	——	- .06¾
Vansul Yellow M.B.*	lb.	.95	- 1.95
Yellow Powders	lb.	2.00	- 5.00
Zinc Yellow	lb.	.26	- .31

DISPERSING AGENTS

Anchoid*(†)	lb.	.24	- .25
Armeen 18*	lb.	.38	- .40
Blancol*	lb.	——	- .15¾
Darvan No. 1* (and No. 2*)	lb.	.22	- .30
Daxad 11* (21*, 23*)	lb.	.08	- .30
Diethanolamine (dms., dlvd.)	lb.	.24½	- .27½
Dispersaid*	lb.	1.25	- 1.35
Emcol K-8300* (dms.)	lb.	.19	- .20
Emulphor ON-870*	lb.	——	- .55
Furala*	lb.	.06½	- .07½
Halloid*	lb.	.04½	- .05½
Igepal CO-630*	lb.	——	- .29
Igepon T-73*	lb.	——	- .29½
Kyro EO* (dms.)	lb.	——	- .29¾
Leonil SA*	lb.	——	- .55
Lomar PW*	lb.	——	- .18
Marasperse C*	lb.	.06¼	- .06¾
CB*	lb.	.12¼	- .13¼
N*	lb.	.09½	- .10½
Monoethanolamine (dms., dlvd.)	lb.	.25	- .27¾
Nekal BA-75*	lb.	——	- .40
BX-76*	lb.	——	- .64
Nopco 1187-X*	lb.	.15	- .16
Pluronic F68*	lb.	.38	- .44
R & R 551*	lb.	——	- .28
Rubbex*	lb.	.267	- .285
Stablex B*	lb.	.50	- .95
Stan-Chem BQC*	lb.	.12¼	- .17¼
1067*	lb.	——	- .13½
1471*	lb.	.1687	- .2187
2251*	lb.	.12¼	- .17¼
Trenamine D-25*	lb.	.32½	- .36
Triethanolamine (dms., dlvd.)	lb.	.21½	- .24½
U-3051*	lb.	——	- .148
Yelkin TT*	lb.	.13	- .16
TTS*	lb.	.13	- .16

EXTENDERS

Advagum 1098*	lb.	——	- .64
Arceo 1071-13B*	lb.	.14½	- .15½
1073-18B*	lb.	.13½	- .14½
1294-36B*	lb.	.11½	- .12½
Car-Bel-Ex-A* (and B*)	lb.	——	- .14
Extender 600*	lb.	——	- .1765
Millex*	lb.	——	- .07
W*	lb.	——	- .07
Nopco 2271*	lb.	.15½	- .16½
Polyco 418*	lb.	.17	- .18
PR-162 Latex Extender*	lb.	——	- .182
Synprolac*	lb.	.16	- .23
Synprowax*	lb.	——	- .23
Vistanex*	lb.	——	- .45

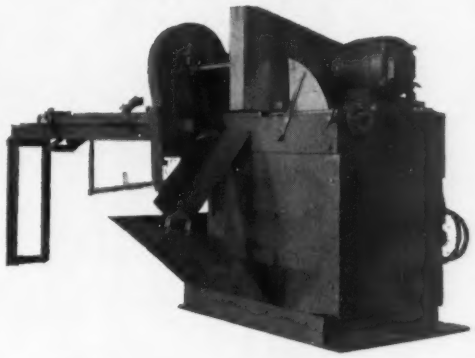
FILLERS (Inert and Reinforcing)

Abrasives			
Carbonite*	lb.	.20	- 1.33
Lionite*	lb.	.14½	- 1.25
Pumice	lb.	.03	- .05
Walnut Shell Grits	lb.	.05	- .08
Aluminum Hydrate	lb.	.08	- .11
Kaiser Alumina*	lb.	.026	- .059
Aluminum Silicate			
Aluminum Flake*	ton	23.50	- 30.00
Marter White*	ton	18.50	- 30.00
Barium Carbonate (l.c.l.)	ton	95.50	-100.00
Barytes			
No. 1 Floated, White*	ton	41.35	- 60.10
No. 2 Floated, Unbleached*	ton	39.35	- 58.10
No. 22 Barytes* (c.l.)	ton	——	- 25.00
No. 3805 Barytes*	ton	22.00	- 26.75
Foam A*	ton	——	- 41.35
Sparmite*	ton	75.00	- 80.00
XIOR*	ton	75.00	- 80.00
Bentonite (c.l.)	ton	——	- 13.50
Argosite Clay* (c.l.)	ton	——	- 12.50
Bennett Clay* (c.l.)	ton	——	- 32.50
SPV Volclay* (c.l.)	ton	——	- 12.50
White Hi-Gel*	ton	——	- 65.90
Blanc Fixe	ton	72.50	-120.00
Calcium Carbonate			
Atomite* (c.l.)	ton	——	- 30.00
B.I. White No. 1 (c.l.)	ton	——	- 9.00
Calcene NC*	ton	72.50	- 92.50
TM*	ton	75.00	- 95.00
Calwhite*	ton	——	- 17.00
Camel-Carb*	ton	——	- 10.00
Camel-Tex*	ton	——	- 18.00
Camel-Wite*	ton	——	- 30.00
Duramite*	ton	——	- 15.00
Gamaso*	ton	——	- 30.00
Kalite*	ton	50.00	- 65.00
Keystone White*	ton	——	- 16.00
Laminar*	ton	——	- 30.00
Lesamite* (c.l.)	ton	——	- 27.50
Lorite*	ton	30.00	- 35.00
Millical*	ton	35.00	- 50.00
Multifex*	ton	140.00	-155.00
MM*	ton	110.00	-125.00
Non-Fer-Al*	ton	30.00	- 45.00
Purecal M*	ton	56.75	- 80.75
SC*	ton	110.00	-125.00
T*	ton	110.00	-125.00
U*	ton	120.00	-135.00

FILLERS (Cont'd)

Calcium Carbonate (cont'd)			
Rambo No. 1*	ton	——	- 9.50
Sierracal*	ton	15.00	- 18.50
Snowflake*	ton	17.00	- 18.00
Super Multifex*	ton	160.00	-175.00
Surfex*	ton	35.00	- 50.00
Suspenso*	ton	33.00	- 48.00
Witcarb Reg.*	ton	56.75	- 85.00
P*	ton	110.00	-140.00
R*	ton	120.00	-150.00
RC*	ton	110.00	-140.00
York White*	ton	——	- 9.50
Calcium Silicate Silene EF*	ton	120.00	-140.00
Calcium Sulfate, Anhydrous Snow White Filler*	ton	——	- 20.50
Calcium Sulfate Hydrous Terra Alba No. 1*	ton	——	- 16.00
Chalk Whiting (l.c.l.)	lb.	.01½	- .01¾
Recco Paris Whiting*	ton	——	- 33.00
OMYA Whiting*	ton	——	- 30.00
Clay			
Aiken Clay*	ton	——	- 14.00
Alsilite* (c.l.)	ton	30.00	- 45.00
Alsite* (c.l.)	ton	——	- 14.00
Aluminum Flake*	ton	23.50	- 30.00
Buca* (c.l.)	ton	——	- 45.00
Burgess No. 20*	ton	——	- 35.00
No. 30*	ton	——	- 37.00
Burges Iceberg*	ton	——	- 50.00
Catalpo* (c.l.)	ton	——	- 35.00
Champion*	ton	——	- 14.00
C.S.D.* (c.l.)	ton	——	- 13.50
Crown*	ton	——	- 14.00
Dixie* (c.l.)	ton	——	- 14.00
Franklin Clay—R* (c.l.)	ton	——	- 13.50
Harwick Clays*	ton	18.50	- 57.00
Hi-White R*	ton	——	- 13.50
Kalloid Clay* (c.l.)	ton	——	- 10.50
LGB*	ton	——	- 17.00
LGP*	ton	——	- 19.00
McNamee* (c.l.)	ton	——	- 13.50
Paragon*	ton	——	- 13.50
Pigment 5*	ton	23.50	- 26.50
33*	ton	——	- 37.00
Recco* (c.l.)	ton	——	- 14.00
Swanee Clay*	ton	——	- 12.50
Snobrite*	ton	——	- 12.50
Suprex*	ton	——	- 14.00
Whitetex* (c.l.)	ton	——	- 50.00
Windsor Clay* (c.l.)	ton	——	- 14.00
Diatomaceous Earth	ton	30.00	- 50.00
Kavlorite* (c.l.)	ton	——	- 30.00
Lorite*	ton	——	- 30.00
Flock			
Cotton (White)	lb.	.11	- .28
Colored	lb.	.11	- .19
Filfloc F 40-9000*	lb.	——	- .13
F 6000*	lb.	——	- .36
Polycel*	ton	110.00	-210.00
Rayon, Bleached or Dyed	lb.	.80	- 1.25
Rayon, Grey	lb.	——	- .18
Rayon, Pink	lb.	——	- .20
Solka-Floc* (l.c.l.)	lb.	.07	- .16
Glue, Amber	lb.	.16	- .18
Leather, Shredded	lb.	.05	- .17
Lignin	lb.	.06	- .08
Indulin*	lb.	.06	- .08
Limestone, Pulverized	ton	3.00	- 5.50
Asbestol Regular*	ton	25.00	- 27.00
Asbestol Superfine*	ton	30.00	- 32.00
Georgia Marble No. 10*	ton	——	- 10.00
Industrial Filler No. 100*	ton	——	- 5.75
Micro Velva A*	ton	49.00	- 51.00
L*	ton	57.00	- 59.00
No. 1 White*	ton	——	- 10.00
Magnesium Carbonate	lb.	.10½	- .14½
K & M Clearcarb*	lb.	——	- .14
Technical* (c.l., eqld.)	lb.	.10½	- .12
Magnesium Oxide Magnesite*	lb.	.057	- .073
Magnesium Silicate (see Talc)			
Mica	lb.	.01¼	- .07¾
Concord*	lb.	.07½	- .08¼
Micro-Mica*	lb.	.07½	- .08¼
Mineralite* (c.l.)	ton	40.00	- 85.00
Silversheen*	lb.	.07½	- .08¼
Triple A Mica* (c.l.)	ton	——	- 25.00
Vermiculite*	lb.	——	- .11
Wet Ground Biotite Mica	lb.	.06	- .06¾
Wet Ground Mica No. 160*	lb.	.07½	- .08¼
Pyrophyllite			
No. 261*	ton	——	- 11.50
Pyrax A* (c.l.)	ton	——	- 13.50
WA* (c.l.)	ton	——	- 16.00
Sawdust, Graded	ton	14.00	- 35.00
Silica	ton	16.00	- 27.00
Slate, Powdered (l.c.l.)	ton	15.00	- 20.00
Lo-Micron Slate Flour*	lb.	——	- .04½
No. 133 Slate Flour*	ton	——	- 4.55
Sodium Silico Aluminate Zeolex 23*	ton	120.00	-140.00
Talc (Magnesium Silicate)			
Asbestol Regular*	ton	——	- 25.00
Eastern RC-500*	ton	——	- 30.00
No. 41*	ton	——	- 17.70
No. 549*	ton	——	- 63.00
French*	ton	——	- 59.00
L.S. Silver*	ton	29.25	- 34.25
No. 367*	ton	——	- 13.00
No. 1600*	ton	——	- 70.60
No. 1768*	ton	——	- 13.00

SLICER MACHINE
for
EXTRUDED STOCKS



Capacity Section up to 4" OD or 4x6" flat stock.
Length 3/16" to 8".
Cuts per minute 25 to 175.
Automatic Feed and Circulating Pump.
Made in three sizes.

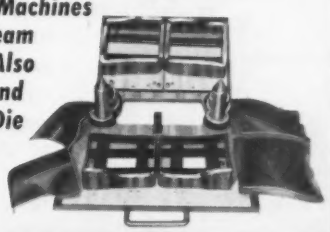
UTILITY MANUFACTURING COMPANY
Cudahy, Wisconsin
Write Today for Complete Information

SAVE TIME SAVE MONEY
with INDEPENDENT and NEW ERA DIES

CLICKER-WALKER
PUNCH PRESS and
MAUL HANDLE

Dies For Every Conceivable Purpose

DISTRIBUTORS FOR:
Fales Clicker Machines and Seelye Beam Die Presses. Also Hard Maple and Composition Die Blocks and Pads. Raw Hide Mauls.



INDEPENDENT DIE & SUPPLY COMPANY
2602 LaSalle Place • St. Louis 4, Missouri
ASSOCIATE:
NEW ERA DIE CO. York County, Red Lion, Pa.

ALCOGUM AN-10
(SODIUM POLYACRYLATE)

Serves the latex compounding industry both as stabilizer and thickener.

ALCOGUM AN-10 is a 10% solution, having a pH of 10. Provides more effective viscosity control of compounds even during prolonged storage, and greater dilutability through adequate stabilization.

Distributors for Firestone Liberian Latex.

•

Our sales and technical staffs are at your disposal.

NEW ENGLAND OFFICE:
Alco Oil & Chemical Corp.
610 Industrial Trust Building
Providence 3, R. I.

ALCO OIL & CHEMICAL CORP.
Trenton Ave. and William St., Philadelphia 34, Pa.

WEST COAST REPRESENTATIVE:
H. M. Royal, Inc.
Whse., 4814 Loma Vista Ave.
Los Angeles 58, Cal.

FILLERS (Cont'd)

Talc (cont'd)			
Nytal 200*	ton	—	25.00
300*	ton	—	36.00
Sierra White*	ton	25.75	30.75
Soapstone*	ton	—	13.00
Walnut Shell Flour	ton	55.00	100.00
Stan-Shell*	ton	80.00	100.00
Whiting, Commercial	ton	—	7.00
Allied Whiting*	ton	9.50	20.00
Camel-Carb*	ton	—	10.00
C-C-O White*	ton	—	19.00
Georgia Marble No. 15*	ton	—	15.00
No. 16*	ton	—	16.00
Keystone* (c.l.)	ton	—	16.00
Piqua No. 1 YAA* (c.l.)	ton	—	9.00
No. 2 LS* (c.l.)	ton	—	9.00
Snowflake* (c.l.)	ton	17.00	18.00
Stan-White 325*	ton	8.50	11.10
Veroc* (c.l.)	ton	—	9.50
Welco* (c.l.)	ton	—	9.50
York White R* (c.l.)	ton	—	9.00
Wood Flour	ton	25.50	48.00

FINISHING MATERIALS, SURFACE

Beaco Finishes*	gal.	2.10	2.35
Black Out*	gal.	4.50	8.00
Shellac, Orange Gum	lb.	.50	.60
VanWax*	gal.	1.45	1.50

FLAME RETARDANTS

Celluflex CEF* (dms.)	lb.	—	.65
Chlorowax 70*	lb.	.18	.19
Halowax*	lb.	.35½	.61½
Zinc Borate 3167*	lb.	.1920	.2020
Zyrox Compounds*	lb.	.38½	.95½

LATEX MODIFIERS

OPD-101*	lb.	—	.26

LUBRICANTS, MOLD

Akro Gel*	lb.	—	.165
Alipal CO-433*	lb.	—	.20
CO-436*	lb.	—	.26
Aquadag*	lb.	3.50	4.00
Aquarex D*	lb.	—	.78
L*	lb.	—	.94
ME*	lb.	—	.80
MDL*	lb.	—	.33
WAQ*	lb.	—	.22
Armid O*	lb.	.39	.41
Borax, Granular (l.c.l.)	ton	89.00	94.00
Carbowax 4000*	lb.	.31	.32
CD Mold Release A*	gal.	—	6.50
B*	gal.	—	5.00
Colite Concentrate* (dms.)	gal.	.90	1.15
Colite D43D*	gal.	1.15	1.40
Concentrex*	lb.	—	.25
Dag Dispersions No. 197*	lb.	1.85	2.90
D.C. 7 Compound*	lb.	5.13	6.50
D.C. Emulsion No. 7*	lb.	1.59	2.07
No. 8*	lb.	1.36	1.80
No. 35*	lb.	1.36	2.50
No. 35A*	lb.	1.36	2.50
No. 35B*	lb.	1.36	2.50
No. 36*	lb.	1.36	2.50
D.C. Mold Release Fluid*	lb.	3.39	4.75
Dri-Lube*	lb.	—	.22
G-E Silicone Fluid SF-92*	lb.	3.39	5.00
G-E Silicone Emulsion SM-33*	lb.	1.36	1.55
SM-61*	lb.	1.36	1.55
Glydag G*	lb.	1.30	2.45
Hawkeye Flake* (dlvd.)	lb.	.14¾	.15½
HSC No. 35*	lb.	1.36	1.48
Igepal CO-430*	lb.	—	.29
CO-530*	lb.	—	.29
CO-630*	lb.	—	.29
Igepon AP-78*	lb.	—	.48
T-51*	lb.	—	.13½
Kokobace R*	lb.	.17½	.18½
Linde Silicone L-45*	lb.	3.72	4.80
LE-45*	lb.	1.46	2.50
Lubri-Flo*	gal.	10.00	12.00
Migralube*	lb.	—	.35
ML-1027-2C*	gal.	—	2.15
ML-1028-2C*	gal.	—	2.15
Mold Lubricant No. 72 Conc.* (dms.)	gal.	—	1.90
No. 735* (dms.)	gal.	—	1.25
No. 769* (dms.)	gal.	—	1.20
No. 856* (dms.)	gal.	—	1.90
No. 880* (dms.)	gal.	—	1.12
No. 935* (dms.)	gal.	—	1.64
No. 980* (dms.)	gal.	—	1.60
Moldeze No. 3*	gal.	5.00	6.00
Mold-Brite*	gal.	—	1.50
Monopole Oil MD*	lb.	—	.16
Olate Flakes*	lb.	.22¼	.23¼
Orvus WA Paste* (dms.)	lb.	—	.23
Polyglycol 15-200*	lb.	.25	.28¾
E4000*	lb.	.31	.37
Prodag*	lb.	.28	.42
Purity Flake* (dlvd.)	lb.	.17¾	.18½
Rubber-Flo*	gal.	1.25	2.00

LUBRICANTS, MOLD (Cont'd)

Rubber-Glo*	gal.	—	.94
Rusco Mold Paste*	lb.	—	.25
Sericite* (l.c.l.)	ton	65.00	75.00
SF-92 Silicone Fluid*	lb.	3.70	4.22
SM-33 Silicone Emulsion*	lb.	1.50	1.68
55*	lb.	1.46	2.00
61*	lb.	1.56	1.68
Thermalube*	lb.	—	.13¾
Ucon Lubricants*	lb.	.26¾	.27¾
Ulco Mold Soap*	lb.	.12	.23

LUBRICANTS, RUBBER

Diglycol Stearate Neutral (and SE) (dms.)	lb.	—	.25
Emcol DS-50*	lb.	—	.38
RDH-S*	lb.	—	.27
Extrud-o-Lube*	gal.	—	1.54
G.B. Naphthenic Neutrals*	gal.	.11	.18
Ivory Chips*	lb.	.18¾	.19¾
Latex-Lube GR* (dlvd.)	lb.	.19¼	.20
No. 82-A* (450 lb. dms.)	lb.	—	.08½
Propylene Stearate (dms.)	lb.	.35	.60

LUBRICANTS, RUBBER SURFACE

Barium Stearate	lb.	.37	.42
Calcium Stearate	lb.	.35	.40
D.C. 4 Compound*	lb.	5.13	6.50
D.C. 200 Fluid*	lb.	3.39	4.75
ELA*	lb.	—	.82
G-E Silicone Fluid SF-92*	lb.	3.39	5.00
Glycerized Lubricant*	gal.	—	1.48
Glydag B*	lb.	1.50	2.10
G*	lb.	1.30	2.45
Hydro-Zinc*	lb.	—	.20
Latex-Lube Pigmented* (dlvd.)	lb.	.17¼	.18¼
R-66*	lb.	—	.16½
Liqui-Lube* (dlvd.)	lb.	—	.16¼
N.F.* (dlvd.)	lb.	—	.16¾
N.T.* (dlvd.)	lb.	—	.16¾
Polyethylene Glycol	lb.	.22	.26
Rubber Free (Concentrate)*	gal.	—	1.44
Jel*	lb.	.18	.21½
Slab-Dip*	lb.	—	.15
Stock-Lube*	lb.	—	.19
Zinc Stearate	lb.	.39	.42

MOLD CLEANERS

Actusol* (dlvd.)	gal.	1.45	1.65
Alkon* (dlvd.)	lb.	.16	.16½
CA-301*	gal.	—	2.29
CA-302*	gal.	—	2.63
Metso Anhydrous*	cwt.	5.10	7.35
Metso 99*	cwt.	4.60	6.85
200*	cwt.	6.00	8.25
Granular*	cwt.	4.10	6.35
Orvus Extra Granules*	lb.	.22½	.23½
Rubber-Sol*	gal.	2.97	3.97
Sprex A.C.* (dlvd.)	lb.	.17¾	.18¾

PEPTIZING AGENTS

Peptizer P-12*	lb.	.95	1.25
Pepton 22 Plasticizer*	lb.	.79	.82
RPA 2*	lb.	—	.78
3*	lb.	—	.47
3 Conc.*	lb.	—	.83
5*	lb.	—	.59
6*	lb.	—	1.58

PLASTICIZERS & SOFTENERS

Acto 500*	lb.	—	.09
Adipol BCA* (dms.)	lb.	.47	.47½
2EH*	lb.	.43½	.46½
10A*	lb.	.43½	.46½
ODY*	lb.	.48	.51
810*	lb.	.43½	.46½
XX*	lb.	.43½	.46½
American Pine Tar*	lb.	.0438	.0712
Arneel*	lb.	.27	.39
Arolene 1980* (c.l.)	lb.	—	.10
Aromatic Plasticizer 10* (and 25*) (dms.)	lb.	.05	.06½
Aromatic Tar	gal.	.0573	.1973
Bardol*	lb.	.02¾	.03¾
B*	lb.	.06¼	.06½
Bayol D*	gal.	—	.382
F*	gal.	—	.52
Beeswax, Bleached	lb.	.72	.75
Yellow Refined	lb.	.70	.90
Bondogen*	lb.	.55	.60
B.R.C. No. 20*	lb.	.0150	.0175
B.R.H. 2*	lb.	.0213	.0351
BRS 700*	lb.	.0200	.0285
B.K.T. 3*	lb.	.0180	.0265
4*	lb.	.0250	.0260
7*	lb.	.0300	.0310
B.R.V.*	lb.	.0475	.0565
Bunarex Resins*	lb.	.06½	.07½

PLASTICIZERS & SOFTENERS (Cont'd)

Bunatak AH*	lb.	—	.09½
N*	lb.	—	.31
U*	lb.	—	.17½
No. 90*	lb.	—	.09
No. 210*	lb.	—	.14
Burgundy Pitch*	lb.	.0843	.0888
Butac*	lb.	.11¾	.12¾
BxDC (dms.)	lb.	.40	.41
Butyl Carbitol Perlargonate (dms.)	lb.	—	.64½
Butyl Cellosolve Perlargonate (dms.)	lb.	—	.68
Butyl Oleate	lb.	.23¼	.26
Butyl Palmitate	lb.	—	.26½
Butyl Stearate (dms.)	lb.	.25	.26
BWH-1*	lb.	.16	.17
Cabflex DDA*	lb.	.42½	.45½
DDP*	lb.	.30½	.33½
Di-BA*	lb.	.43¼	.46¼
Di-OA*	lb.	.42½	.45½
Di-OP*	lb.	.30½	.33½
Di-OZ*	lb.	.48	.50¾
DOA*	lb.	.42½	.45½
DOP*	lb.	.30½	.33½
ODA*	lb.	.42½	.45½
ODP*	lb.	.30½	.33½
Cabol 100*	lb.	.02	.06
Califlux 510* (and 550*)	lb.	.02½	.03¼
G.P.*	lb.	.01¼	.02
R-100*	lb.	.04½	.05¼
TT*	lb.	.0170	.0245
Candelilla Wax, Prime	lb.	.62	.64
Refined Light	lb.	.63	.65
Carbowax 4000* (dms.)	lb.	.31	.32
Cardolite 615*	lb.	.33¾	.36¾
816*	lb.	.25¾	.28¾
Carnauba Wax, Crude	lb.	.66	.68
Flaked	lb.	.75	1.20
Refined, Technical	lb.	.69	.74
Refined, Pure	lb.	.75	.80
Yellow	lb.	1.03	1.10
Celluflex* (dms.) 112* (t.c., dlvd.)	lb.	—	.33
179-A* (t.c., dlvd.)	lb.	—	.33
179-C* (t.c., dlvd.)	lb.	—	.33
179-EG* (t.c., dlvd.)	lb.	—	.33
DBP* (t.c., dlvd.)	lb.	—	.30
DOP* (t.c., dlvd.)	lb.	—	.30½
TPP* (dms., eqld.)	lb.	—	.40
Ceresin Wax	lb.	.11½	.28
White and Yellow	lb.	.14½	.22
Chlorowax 40*	lb.	.14½	.15½
CTLA Polymer*	gal.	.20	.36
Cumar Resins*	lb.	.06½	.17
Darex DBP*	lb.	.33	.35¾
DOP*	lb.	.34	.37
DIOP*	lb.	.34	.37
D.B.M.*	lb.	.32	.34¾
Degras, Common	lb.	—	.14
Diallyl Phthalate (dms.)	lb.	.51½	.52¼
Dibenzyl Sebacate	lb.	.89½	.90
Dibutoxyethyl Sebacate	lb.	—	.56¾
Dibutyl Phthalate	lb.	.32	.33
Dibutyl Sebacate	lb.	.67½	.68
Dicapryl Adipate	lb.	.45	.46
Dicapryl Phthalate	lb.	.31½	.32½
Dicapryl Sebacate	lb.	.62½	.63
Di-Carbitol Phthalate (dms.)	lb.	.42	.42½
Dicyclohexyl Phthalate	lb.	.59	.60
Diethyl Phthalate (t.c.)	lb.	.25	.27¾
Di-2-ethylhexyl Phthalate (t.c.)	lb.	—	.30½
Dihexyl Adipate	lb.	.44	.45
Dihexyl Phthalate	lb.	.32	.33
Dihexyl Sebacate	lb.	.63½	.64
Diisobutyl Azelate	lb.	—	.47¾
Di-iso-octyl Adipate (dms.)	lb.	.45½	.46½
Di-iso-octyl Phthalate (t.c.)	lb.	.32½	.33½
Dimethyl Phthalate (t.c.)	lb.	.27½	.30¼
Dimethyl Sebacate	lb.	1.26½	1.27
Dinopol 235*	lb.	.33½	.36½
IDO*	lb.	.30½	.33½
MOP*	lb.	.32	.35
Dioctyl Phthalate (dms.)	lb.	.32½	.33½
Dioctyl Sebacate (dms.)	lb.	.62½	.63
D.I.O.P. (dms.)	lb.	.30½	.33½
Dipolymer Oil	gal.	.33	.48
Dispersing Oil No. 10*	lb.	.06	.06¼
Dutrex 6*	gal.	—	.11
15E*	gal.	—	.10
Elastex 10-P*	lb.	.30½	.33½
50-B*	lb.	.25	.28
DCHP*	lb.	.59	.60
Emulphor EL-719*	lb.	—	.62
Estac*	lb.	—	.16
Ethox* (dms.)	lb.	.45	.45½
Flexol B-400*	lb.	.27	.28
DOP*	lb.	.32½	.33½
TOF*	lb.	.45½	.46½
3GH*	lb.	.45½	.46
3GO*	lb.	.54½	.55
4GO*	lb.	.34½	.35½
426*	lb.	.27	.30
Flexricin P-1*	lb.	—	.32
P-4*	lb.	—	.31
P-6*	lb.	—	.37
P-8*	lb.	—	.33
Fortex* (dms.)	lb.	.12½	.14½
Galex W-100*	lb.	.15½	.19¼
G.B. Asphaltic Flux*	gal.	.08	.14
G.B. Light Process Oil*	lb.	.02½	.03¼
Medium Process Oil*	lb.	.03½	.04¼
G.B. Naphthenic Neutrals*	gal.	.11	.18
Good-rite GP233*	lb.	.44¾	.47¾
GP261*	lb.	.34	.37

CAROLITE COLOR CHIPS for LACQUERS

colors fully ground-in the following MEDIA

"VINYLITES" VAGH-VYLF-VYNS-VYHH
"HALF SECOND BUTYRATE"
"SARAN"
"PLIOLITES" S-4, NR
"HYCAR"
POLYVINYL BUTYRATE
ETHEL CELLULOSE
POLYSTYRENE

40 series } permanently flexible
70 series }

CENTURY CAROLITE COLOR CHIPS ARE OUTSTANDING, *for* BEST DISPERSIONS, MOST EXCELLENT ADHESIONS, FINEST GLOSS.

Natural Rubber, Nitrile Rubber, & Acrylic Rubber solution in various solvents for paint additives & extenders.

We solicit your inquiries

CENTURY PRODUCTS CO.
DETROIT 38, MICH.

Decorate and *Identify*

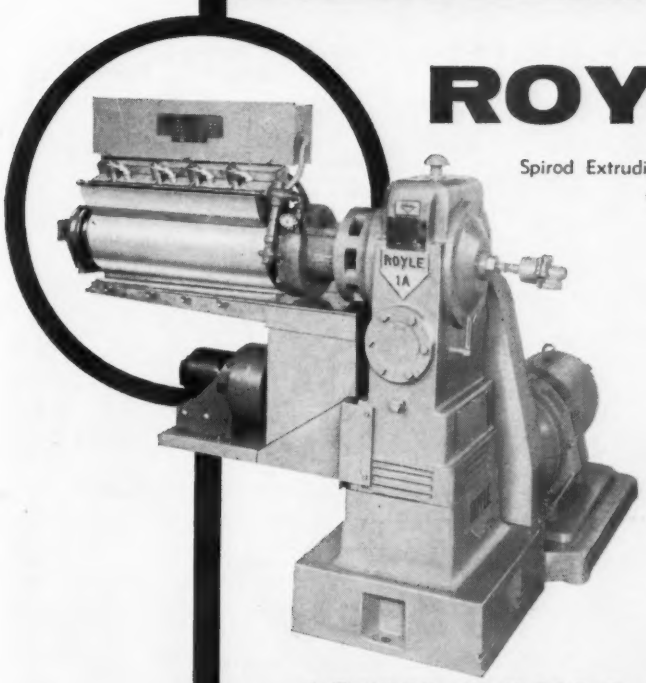
Your Rubber or Vinyl Products with

MEYERCORD
ELASTICALS

for trade marks, instructions or high color rubber or vinyl product decorations, write to

ELASTICAL DIVISION

THE MEYERCORD CO.
World's Largest Decalcomania Manufacturers
DEPT. G-423, 5323 WEST LAKE STREET, CHICAGO 44, ILLINOIS



ROYLE
1A (2½" cylinder bore)

Spirod Extruding Machine with electric heating and high velocity evaporative cooling. An all-purpose extruding machine for processing rubber and plastics. Available in sizes 1⅛" through 12" cylinder bore.

Strainers, Cooling Troughs, Light Wire and Cable Capstans, Motorized Take-ups, Temperature Control Units.

JOHN ROYLE & SONS
ROYLE PATERSON N. J. 1880
PIONEERED THE CONTINUOUS EXTRUSION PROCESS IN

London, England — James Day (Machinery) Ltd. — Hyde Park 2430 - 0456
Home Office — V. M. Hovey J. W. VanRiper — SHerwood 2-8262
Akron, Ohio — J. C. Clinefelter — SWendale 4-5020
Los Angeles, Cal. — H. M. Royal, Inc. — LOgan 3261

PATERSON 3, NEW JERSEY

PLASTICIZERS & SOFTENERS (Cont'd)

Harflex 500* (dms.)	lb.	.31½	.33½
Herron-H.T.*	gal.	.16	.27
Herron-Plas*	lb.	——	.03¾
Herron-Wax*	lb.	.05¼	.06
No. 23*	lb.	.08¼	.08¾
No. 24*	lb.	.07¼	.07¾
HSC No. 13*	lb.	.27	.30
Indonex 632½* (633½*, 634½*, 637½*)	gal.	.11	.17
Kapsol*	lb.	.32½	.35¼
Kenflex*	lb.	.18	.27
Kessoflex 101* (dms.)	lb.	——	.39
102* (dms.)	lb.	——	.32½
103* (dms.)	lb.	——	.41½
104* (dms.)	lb.	——	.48
105* (dms.)	lb.	——	.33¼
106* (dms.)	lb.	——	.35½
108* (dms.)	lb.	——	.37
109* (dms.)	lb.	——	.36¼
KP 23* (dms.)	lb.	.29	.32
90* (dms.)	lb.	.45	.48
140* (dms.)	lb.	.48	.48½
201* (dms.)	lb.	.58¼	.59¼
220* (dms.)	lb.	.31	.34
555* (dms.)	lb.	.33¼	.33¾
Kremol 40*	gal.	.36	.46
50*	gal.	.39	.49
Kronisol* (dms.)	lb.	.33	.35½
Kronitex AA* (dms.)	lb.	.33	.36
1* (dms.)	lb.	.33	.36
K-3*	lb.	.33	.36
MX*	lb.	.33	.36
Lanolin, Tech. Anhydrous	lb.	——	.28
Lead Oleate	lb.	——	.30½
Lindol* (dms., t.c.)	lb.	.33	.36
2-Mercaptoethanol (dms.)	lb.	1.25	1.50
Methox*	lb.	.35¼	.37¾
Methyl Laurate	lb.	.25	.27
Methyl Oleate	lb.	——	.20
Methyl Stearate (dms.)	lb.	——	.30
Monoplex S-71*	lb.	.46½	.47½
Montan Wax, Crude	lb.	.13½	.15
Flaked	lb.	.18	.40
Morflex*	lb.	.32	.69½
MR 2088* (dms.)	lb.	——	.19
Natac*	lb.	.11¼	.12¼
Nebony Resins* (dms.)	lb.	.04	.04½
Neolene 210* (t.c.)	lb.	——	.16
212* (t.c.)	lb.	——	.14
220* (t.c.)	lb.	——	.15
Nerium*	lb.	——	.09
Nevillac Resins* (dms.)	lb.	.31	.85
Neville Resins* (dms.)	lb.	.12	.18
Nevindene Resins* (dms.)	lb.	.15	.18
Nevinol* (dms.)	lb.	——	.20
Nuba 1* (and 2*) (dms.)	lb.	.05¾	.06¼
3X* (dms.)	lb.	.07¾	.08¼
No. 480 Oil Proof Resin*	lb.	——	.18
Ohopex Q10* (dms.)	lb.	.29½	.32½
R9* (dms.)	lb.	.35½	.37¾
Opalwax	lb.	.37	.38
Ortho-Nitrobiphenyl	lb.	.13	.15
Ozokerite Wax, White and Yellow	lb.	.22	.43
Paradene Resins (dms.)	lb.	.06½	.07½
Para Flux* (dms.)	gal.	.19¼	.20¼
2016* (dms.)	gal.	.22	.23
Para Lube* (l.c.l.)	lb.	.046	.048
Paraplex G-60*	lb.	.35	.36
G-62*	lb.	.37½	.38½
Parmo*	lb.	.06	.13½
Pepton 22 Plasticizer*	lb.	.79	.82
PG-16*	lb.	——	.35
Philrich-5* (t.c.)	gal.	——	.11
Picco 10* (and 25*)	lb.	——	.13½
60* (and 75*)	lb.	——	.13
100*	lb.	.13	.14
Piccocizer 30*	lb.	.05½	.07
Piccolastic A* (B*, C*, D* & E*)	lb.	.28	.29
FT* (FHF* & FN*)	lb.	.1815	.1965
T-135*	lb.	.22¼	.23¼
Piccolyte S Resins*	lb.	.1570	.2250
Piccopale Resins*	lb.	.12	.15
Piccoumaron Resins*	lb.	.06½	.18
Pigmentar*	lb.	.0427	.0712
Pigmentaroil*	lb.	.0427	.0712
Plastac M*	lb.	——	.09¼
Plasticizer 2286*	lb.	——	.26¼
Plasticizer 4141*	lb.	.56¾	.66¾
Plasticizer MP*	lb.	.0350	.0755
Plasticizer ODN*	lb.	.31	.37
Plasticizer SC*	lb.	.54	.55
Plasticizer W-13*	lb.	.37	.38¾
Plastoflex 3*	lb.	——	.52
50*	lb.	.34¼	.35¼
55*	lb.	.31	.32
520*	lb.	.37½	.38½
SP-2*	lb.	——	.43
VS*	lb.	.41¾	.42¾
Plastogen*	lb.	.07¾	.08
Plastolein 9050* (c.l.)	lb.	.53¼	.55½
9055*	lb.	.29¾	.31½
9058*	lb.	.49¾	.51½
9250*	lb.	.36	.37¾
9715*	lb.	.38¾	.40½
Plastone*	lb.	.27	.30
Polycizer 162*	lb.	.30½	.33½
332*	lb.	.43½	.46½
ED*	lb.	——	.56¾
Polyco 438*	lb.	.34	.35
Polymel C-130*	lb.	.19½	.20½
D*	lb.	.23½	.24½
6*	lb.	.05¾	.07¾
Process Oil C-255* (c.l.)	gal.	——	.22
Propylene Stearate (dms.)	lb.	——	.32

PLASTICIZERS & SOFTENERS (Cont'd)

PRR 1*	gal.	.15	.35
PT 67 Light Pine Oil* (dms.)	gal.	——	.60
101 Pine Tar Oil* (t.c., dms.)	gal.	.0427	.0601
400 Pine Tar* (600* & 800*) (t.c., dms.)	gal.	.0427	.0601
PX-104*	lb.	.32	.33
PX-108*	lb.	.32½	.33½
PX-138*	lb.	.32½	.33½
PX-208*	lb.	.44½	.45½
PX-238*	lb.	.44½	.45½
PX-404*	lb.	.68½	.69
PX-438*	lb.	.63½	.64
PX-917*	lb.	.35	.36
Reogen*	lb.	.13¼	.13½
465 Resin* (dms.)	lb.	.07	.07½
Resin 731-C*	cwt.	——	15.00
Resin C*	lb.	.0225	.0310
Resinex*	lb.	.04	.04½
L-4*	lb.	.03	.04¼
Rexflex*	lb.	——	.15
Rosin Oil	gal.	.54	1.20
R.S.O. Softening Oil*	lb.	.03	.05
Rubberol*	lb.	——	.25¾
Santicizer B-16*	lb.	.48¾	.49¾
E-15*	lb.	.52¾	.53¾
M-17*	lb.	.44¾	.45¾
No. 140*	lb.	.35	.36
No. 141*	lb.	.36	.37
No. 160*	lb.	.27	.28
Sherolatum*	lb.	.03½	.06
Solarite Resin No. 11*	lb.	.16½	.22½
Staflex DBES*	lb.	.67½	.68½
DOS*	lb.	.68	.69
IXA*	lb.	.34	.35
KA*	lb.	.37¾	.38¾
Stanolind Petrolatum*	lb.	.053	.089
Wax*	lb.	.31	.33
Sunny South Burgundy Pitch*	lb.	.0980	.1025
Pine Tar*	lb.	.0427	.0712
Rosin Oil*	gal.	.58	.87½
Superla Wax*	lb.	.34½	.44
Syncera Wax*	lb.	.23	.34
Syn Tac* (c.l.)	gal.	——	.33
Synthetic Revertant Oil	lb.	——	.16
Tar, Refined	gal.	.1200	.1760
Terpene A*	gal.	——	.65
TP-90B*	lb.	——	.59
TP-95*	lb.	——	.65
Transphalt Resins*	lb.	.02¼	.04¾
Triacetin	lb.	.43	.47
Tributyl Phosphate (dms.)	lb.	.52	.53
Tricresyl Phosphate (t.c.)	lb.	.33	.36
Turgum S*	lb.	.10	.11
Vanadiset B*	lb.	.03½	.06
C*	lb.	.03	.05¾
MR 80 Mesh*	lb.	.07¼	.10
Vistac No. 1*	gal.	1.00	1.21
P*	lb.	.18	.18½
Vopcolene 50*	lb.	——	.37
Witcizer 100*	lb.	.26	.27
200*	lb.	.19½	.20½
201*	lb.	.23½	.24½
300*	lb.	.30	.33
312*	lb.	.30½	.33½
313*	lb.	.30½	.33½
412*	lb.	.42½	.45½
Witresin*	ton	50.00	57.50

PROCESSING AIDS

Castor Oil, Blown (dms.)	lb.	——	.21
Refined (dms.)	lb.	——	.18½
Castorwax*	lb.	——	.24½
Dutrex 7*	lb.	.12	.20
ELA*	lb.	——	.82
Emcol MAS*	lb.	——	.74
Kenflex N*	lb.	——	.18
Millrex*	lb.	——	.15
Polycin 783*	lb.	——	.24½
Resin No. 510*	lb.	.15	.22
Pulverized*	lb.	.20½	.25
Zyrox*	lb.	.50	.79

PROTECTIVE & STABILIZING AGENTS

Acacia*	lb.	.12¾	.21
Alpha Protein	lb.	——	.23
Aroostocrat*	lb.	——	.07½
Carob Bean Flour	lb.	——	.30
Casein	lb.	.24	.31
Emcol K-8300* (dms.)	lb.	.19	.20
Ethylene Diamine 68%	lb.	.44	.47
Gum Arabic	lb.	——	.19
Karaya Gum	lb.	——	.25
Locust Bean Gum	lb.	——	.31
Prosein*	lb.	——	.06
Stablex B*	lb.	.50	.95
K*	lb.	.27	.35

RECLAIMING AGENTS

Amalgamator Z-4*	lb.	.32	.34
Armeen C*	lb.	.45	.47
Mixed Crude*	lb.	.17	.23
T*	lb.	.29	.31
Burco RA*	lb.	.05½	.08¼
C-6 Oil* (28* & 32*)	gal.	.33	.38

RECLAIMING AGENTS (Cont'd)

C-10 Oil*	gal.	.25	.30
C-33* (t.c.)	gal.	——	.21½
C-42* (t.c.)	gal.	——	.23
Caustic Soda—Flake 76% (c.l., dms.)	cwt.	——	4.25
Liquid 50% (t.c.)	cwt.	——	2.70
Solid 76% (c.l., dms.)	cwt.	——	3.85
Cresylic Acid (99-100%)	gal.	.80	.94
D-4* (t.c.)	gal.	——	.27
E-5* (t.c.)	gal.	——	.25
Flake Calcium Chloride (77-80%)	ton	——	27.00
G.B. Reclaiming Oil*	gal.	.12	.18
CD-10*	gal.	.10	.16
CD-50-U*	gal.	.18	.24
Gensol No. 6* (t.c.)	gal.	——	.40
Heavy Aromatic Naphtha	gal.	——	.13¼
LX-77 Reclaiming Solvent*	gal.	.21	.33
LX-572 Reclaiming Oil*	gal.	.27	.32
LX-777 Reclaiming Oil*	gal.	.23	.33
Neo-Fat D-242*	lb.	.05½	.07¾
No. 517 H.B. Oil*	gal.	.11½	.16½
535*	gal.	.22	.27
PT 67 Light Pine Oil* (dms.)	gal.	——	.60
PT 101 Pine Tar Oil* (t.c., dms.)	gal.	.0427	.0601
PT 150 Pine Solvents* (dms.)	gal.	——	.44
Q Oil* (t.c.)	gal.	——	.286
Reclaiming Oil 3186-G*	gal.	.25	.36½
Reclaiming Reagent No. 1431*	lb.	.21	.25
R.P.A. No. 3*	lb.	——	.47
RR-10*	lb.	——	.36
Soda Ash (c.l., bags)	cwt.	——	1.65
Solvent 534*	gal.	.20½	.26½
Solvent Oil 21*	gal.	.24	.29
C-42*	gal.	.23	.28
Union Solvent 4060-O*	gal	——	.184
X-1 Resinous Oil*	lb.	.0210	.0300

REINFORCING AGENTS—CARBON BLACK

Channel, Hard Processing (HPC) (bags)

Atlantic HPC-98*	lb.	.0740	.1225
Continental F*	lb.	.0740	.1225
Croflex*	lb.	.0740	.1225
Dixiedensed (and S)*	lb.	.0740	.1225
HX Compact*	lb.	.0740	.1225
Kosmobile (and S)*	lb.	.0740	.1225
Micronex HPC*	lb.	.0740	.1225
Spheron 4*	lb.	.0740	.1225
Witco No. 6*	lb.	.0740	.1225

Channel, Medium Processing (MPC) (bags)

Atlantic MPC-95*	lb.	.0740	.1225
Collocarb*	lb.	——	.0625
Continental A*	lb.	.0740	.1225
Croflex TH*	lb.	.0740	.1225
Dixiedensed HM (and S-66)	lb.	.0740	.1225
Huber Arrow TX*	lb.	.0740	.1225
Kosmobile HM (and S-66)	lb.	.0740	.1225
Micronex Standard*	lb.	.0740	.1225
Spheron 6*	lb.	.0740	.1225
Texas M*	lb.	.0740	.1225
Witco No. 1*	lb.	.0740	.1225

Channel, Easy Processing (EPC) (bags)

Atlantic EPC E-42*	lb.	.0740	.1225
Collocarb*	lb.	——	.0625
Continental AA*	lb.	.0740	.1225
Croflex 77*	lb.	.0740	.1225
Dixiedensed 77*	lb.	.0740	.1225
Kosmobile 77*	lb.	.0740	.1225
Micronex W-6*	lb.	.0740	.1225
Spheron 9*	lb.	.0740	.1225
Texas E*	lb.	.0740	.1225
Witco No. 12*	lb.	.0740	.1225
Wyex*	lb.	.0740	.1225

Channel, Conducive (CC) (bags)

Continental R-40*	lb.	.2300	.3000
Dixie 5 Dustless*	lb.	.1200	.1900
Dixie Voltex*	lb.	.2300	.3000
Kosmink Dustless*	lb.	.1200	.1900
Kosmos Voltex*	lb.	.2300	.3000
Spheron C*	lb.	.1400	.1850
Voltex*	lb.	.2300	.3000
Texas 109*	lb.	.0790	.1190

Conducive Furnace Black (CF) (bags)

Aromex 115*	lb.	.0890	.1290
Shawinigan Acetylene Black*	lb.	.1700	.2600
Vulcan C*	lb.	.1050	.1500

Channel, Surface Treated (STC) (bags)

Texas 109*	lb.	.0790	.1190

Now . . . Up-To-The-Minute

INTERNATIONAL TECHNICAL ASSISTANCE

- To tire and other rubber manufacturers abroad who desire to learn the latest American "Know-How" . . . cut manufacturing costs — we offer comprehensive Technical Assistance at low cost.
- Dayton Rubber's I.T.A. plan has been in existence for 20 years. Rubber experts and teachers who give unexcelled technical assistance at a surprisingly nominal cost . . . all backed by 50 years of recognized leadership in the rubber industry . . . with 4 U. S. plants.
- We train your personnel in these modern plants . . . help you establish the latest formulae for processing natural and all new types of synthetic rubbers and textiles . . . latest "Know-How" in Tubeless Tires, Butyl Tubes, Rayon and Nylon Cords, Carbon Blacks. We also design factories and supervise machinery installations if desired. Write: International Technical Assistance Division, Dayton Rubber Co., Dayton 1, Ohio.

CABLE ADDRESS: THOROBRED

I.T.A.

GOLDEN JUBILEE

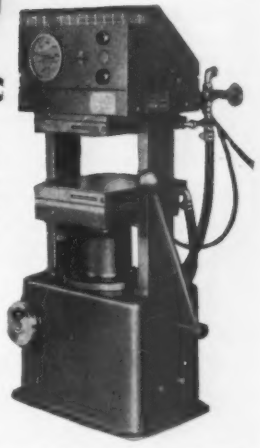
Dayton Rubber 50 YEARS OF PROGRESS

your best bet in a small moulding press

P·H·I*

COMPACT·FAST DEPENDABLE

- Accurate temperature and pressure controls
- Ram pressures up to 125 tons
- Fast-action two-stage pump
- Choice of platens— 8"x8", 8¾"x12", 12½"x12½", 12½"x18½", 18½"x18½", 24½"x24½"
- Special hot-cold laminating presses
- Modification to suit customer requirements.



P.H.I. Hydraulic Presses are being used in almost every line of industry for almost every kind of compression operation where handy, quick-acting, dependable pressures and accurate heat control is required.

Write for Circular

PASADENA HYDRAULICS INC.
279 N. Hill Avenue
Pasadena 4, California

PRESS

1955 Model...

Equipped with Styrene Monomer

Styrene Monomer is an indispensable ingredient of GR-S synthetic rubber, widely used in the manufacture of tough, puncture-resistant tubeless tires. Because GR-S rubber tires possess *toughness with flexibility*, they wear longer and are better able to withstand punishment.

Styrene Monomer is used in the manufacture of other styrene-butadiene copolymers for commercial rubber applications. These include shoe soles and heels, hose, floor tile, luggage, apparel accessories, industrial conveyor belts and power transmission belting, gaskets, grommets, wire coating, and a wide variety of others.

Look to Koppers for a dependable source of supply for Styrene Monomer. You'll have it where you need it, when you need it. For further information, write to:

KOPPERS

Koppers Chemicals

KOPPERS COMPANY, INC., Chemical Division, Dept. RA-65, Pittsburgh 19, Pennsylvania

SALES OFFICES: NEW YORK · BOSTON · PHILADELPHIA · ATLANTA · HOUSTON · CHICAGO · DETROIT · LOS ANGELES

REINFORCING AGENTS—CARBON BLACK (Cont'd)

Furnace, Fast Extruding (FEF) (bags)

Arovel*	lb.	.0600 -	.1000
Collocarb*	lb.	— -	.0525
Coatinex FEF*	lb.	.0600 -	.1000
Croflex 50*	lb.	.0600 -	.1000
Dixie 50*	lb.	.0600 -	.1000
Kosmos 50*	lb.	.0600 -	.1000
Philblack A*	lb.	.0600 -	.1000
Statex M*	lb.	.0600 -	.1000
Sterling SO*	lb.	.0600 -	.1000

Furnace, Fine (FF) (bags)

Statex B*	lb.	.0650 -	.1050
Sterling 99*	lb.	.0650 -	.1050

Furnace, General Purpose (GPF) (bags)

Dixie 35*	lb.	.0500 -	.0900
Kosmos 35*	lb.	.0500 -	.0900
Sterling V*	lb.	.0500 -	.0900
V (Non-Staining)	lb.	.0500 -	.0900

Furnace, High Abrasion (HAF) (bags)

Aromex*	lb.	.0790 -	.1190
Collocarb*	lb.	— -	.0675
Continex HAF*	lb.	.0790 -	.1250
Croflex 60*	lb.	.0790 -	.1190
Dixie 60*	lb.	.0790 -	.1190
Kosmos 60*	lb.	.0790 -	.1190
Philblack O*	lb.	.0790 -	.1190
Statex R*	lb.	.0790 -	.1250
Vulcan 3*	lb.	.0790 -	.1250

Furnace, High Modulus (HMF) (bags)

Collocarb*	lb.	— -	.0525
Continex HMF*	lb.	.0550 -	.0950
Croflex 40*	lb.	.0550 -	.0950
Dixie 40*	lb.	.0550 -	.0950
Kosmos 40*	lb.	.0550 -	.0950
Modulex*	lb.	.0550 -	.0950
Statex 93*	lb.	.0550 -	.0950
930*	lb.	.0470 -	.0870
Sterling L*	lb.	.0550 -	.0950
LL*	lb.	.0550 -	.0950

Furnace, Semi-Reinforcing (SRF) (bags)

Collcarb*	lb.	— -	.0400
Continex SRF*	lb.	.0450 -	.0850
Croflex 20*	lb.	.0450 -	.0850
Dixie 20*	lb.	.0450 -	.0850
Essex*	lb.	.0450 -	.0850
Furnex*	lb.	.0450 -	.0850
Gastex*	lb.	.0500 -	.0900
Kosmos 20*	lb.	.0450 -	.0850
Pelletex*	lb.	.0450 -	.0850
NS*	lb.	.0450 -	.0850
Shawinigan Acetylene Black*	lb.	.1700 -	.2600
Sterling NS*	lb.	.0450 -	.0850
R*	lb.	.0500 -	.0900
S*	lb.	.0450 -	.0850

Furnace Super Abrasion (SAF) (bags)

Philblack E*	lb.	.1250 -	.1650
Vulcan 9*	lb.	.1250 -	.1680

Furnace, Super Abrasion, Intermediate (ISAF) (bags)

Aromex 125*	lb.	.1000 -	.1400
Continex ISAF*	lb.	.1000 -	.1450
Dixie 70*	lb.	.1000 -	.1450
Kosmos 70*	lb.	.1000 -	.1450
Philblack I*	lb.	.1000 -	.1400
Statex 125*	lb.	.1000 -	.1450
Vulcan 6*	lb.	.1000 -	.1450

Furnace, Super Conducive (SCF) (bags)

Vulcan SC*	lb.	.1800 -	.2230

Thermal, Fine (FT) (bags)

P-33 (c.l.)*	lb.	— -	.0550
Sterling FT (c.l.)*	lb.	— -	.0550

Thermal, Medium (MT) (bags)

Shellblack*(†)	lb.	— -	.0250
Sterling MT (c.l.)*	lb.	— -	.0400
MT Non-Staining (c.l.)*	lb.	— -	.0500
Thermax (c.l.)*	lb.	— -	.0400
Stainless (c.l.)	lb.	— -	.0500

REINFORCING AGENTS—SILICA

Cab-O-Sil (compressed)*	lb.	.68 -	.75
Cab-O-Sil (uncompressed)*	lb.	.68 -	.75
D. C. Silica (pelletized)*	lb.	.77 -	.81
Hi-Sil 101*	lb.	.10 -	.11½
233*	lb.	.09 -	.10½
X303*	lb.	.40 -	.45
Santocel*	lb.	.62 -	.64
Valron Estersil*	lb.	— -	1.00

REINFORCING AGENTS—MISCELLANEOUS

Angelo Shellac*	lb.	— -	.60
Darex Copolymer No. 3*	lb.	.47 -	.49
X34*	lb.	.42 -	.44
43G*	lb.	.39 -	.41
Darex Copolymer Latex No. 3-L (and X34L)*	lb.	.36½ -	.39
Durez 12687 (and 12707)*	lb.	— -	.37
Durez 13355*	lb.	— -	.28
Good-rite Resin 50*	lb.	.39 -	.41
Kralac A*	lb.	.43 -	.44
A-EP*	lb.	.39 -	.41
Lampblack	lb.	— -	.12
Marbon S and S-1*	lb.	.39 -	.41
8000*	lb.	.39 -	.41
Marmix*	lb.	.39 -	.41
Pliolite Latex 150*	lb.	.38 -	.39
Pliolite Resin-Rubber Masterbatches*	lb.	.38 -	.56
Pliolite NR*	lb.	.94 -	.95
S3 and S6*	lb.	.43 -	.44
S6B*	lb.	.39 -	.41
Plio-Tuf G75C*	lb.	.53 -	.54
G85C*	lb.	.53 -	.54
Polyco 220*	lb.	.18¼ -	.19¼
Polyfon*	lb.	.08 -	.09

RETARDERS

Benzoic Acid TBAO-2*	lb.	— -	.44
Dutch Boy Normasal*	lb.	— -	.46
ESEN*	lb.	.35 -	.37
Good-rite Vultrol*	lb.	.62 -	.64
Harcopol 1183*	lb.	.70 -	.74
Retarder PD*	lb.	.35 -	.37
W*	lb.	— -	.45
Retardex*	lb.	.47 -	.50

RUBBER SUBSTITUTES

Mineral Rubber

M. R. No. 38*	ton	45.00 -	55.00
Black Diamond*	ton	45.00 -	55.00
Byerlyte*	ton	47.00 -	54.00
Hard Hydrocarbon (dms.)*	ton	46.50 -	48.00
Herron Flake*	ton	— -	45.00
Mineral Rubber, Solid	ton	42.50 -	44.50

Vulcanized Vegetable Oils

Amberex*	lb.	.29 -	.36
Brown*	lb.	.1310 -	.2200
Car-Bel-Lite*	lb.	.3300 -	.3600
Neophax*	lb.	.1570 -	.2680
White*	lb.	.1480 -	.2520

Miscellaneous Rubber Substitutes

G.B. Asphaltenes*	lb.	.06 -	.06½
Gilsowax B*	lb.	.09 -	.11
Resin No. 1098 (dms.)	lb.	— -	.62
No. 1198*	lb.	.46¾ -	.49¾

SOLVENTS

Acetone (dlvd.)	lb.	.07 -	.10
American Dipentine*	gal.	.26½ -	.57
American Pine Oil*	gal.	.86⅝ -	1.04
Amsco Lactol Spirits* (t.c.)	gal.	— -	.19
Naphthol Spirits*	gal.	— -	.18
Mineral Spirits*	gal.	— -	.17
Rubber Solvent* (t.c.)	gal.	— -	.18
Solv A* (t.c.)	gal.	— -	.24½
Solv A-80* (t.c.)	gal.	— -	.30
Solv B* (t.c.)	gal.	— -	.29½
Solv B-90* (t.c.)	gal.	— -	.32
Solv D* (t.c.)	gal.	— -	.30
Solv E*	gal.	— -	.30
Solv F*	gal.	— -	.30
Solv F-80*	gal.	— -	.32½
Solv G*	gal.	— -	.42½
Special Naphtholite* (t.c.)	gal.	— -	.18
Special Textile Spirits*	gal.	— -	.19
Super Hi-Flash Naphtha*	gal.	— -	.45
Super Naphtholite*	gal.	— -	.18
Textile Spirits* (t.c.)	gal.	— -	.19
Amyl Chlorides, Mixed (l.c.l.) (dms.)	lb.	.09¼ -	.10¼
Benzol 90%	gal.	.36 -	.40
Butyl Acetate (t.c.)	lb.	.15 -	.16
Butyl Alcohol (t.c.)	lb.	.15 -	.16
Secondary (dlvd.)	lb.	.13 -	.15
Tertiary (dlvd.)	lb.	.14 -	.15
Carbon Bisulfide, Tech.	lb.	.0515 -	.08½
Carbon Tetrachloride	lb.	.08½ -	.10
Cosol 1*	gal.	.37 -	.43
2*	gal.	.42 -	.48
Cyclohexane	gal.	.70 -	.72
85% (t.c.)	gal.	— -	.36
Cyclohexanone	lb.	.25 -	.27
Diacetone, Pure (dlvd.)	lb.	.12 -	.15
Dichlorethyl Ether (dms.)	lb.	.14½ -	.15
Formal (dms.)	lb.	.30¾ -	.31¼
Dichloropentane	lb.	.04¼ -	.14¾
Dicom*	gal.	.30 -	.42
Halowax Oil*	lb.	.28 -	.41

SOLVENTS (Cont'd)

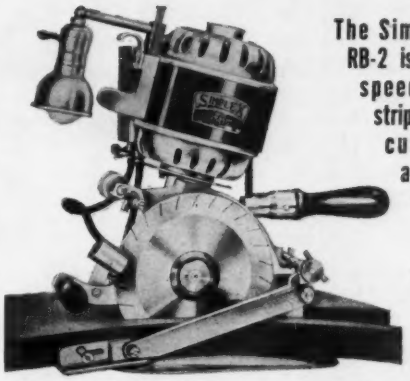
Heptanes* (t.c.)	gal.	.17 -	.22
Hexanes (t.c.)	gal.	.17 -	.22
Isopropyl Alcohol, Ref. 99% (dlvd.)	gal.	.39 -	.59
Ether, Ref. (dlvd.)	lb.	.05 -	.08
Mersol*	gal.	.43 -	.79
Mesityl Oxide (dlvd.)	lb.	.11½ -	.14½
Methyl Acetone, Syn. (dms., dlvd.)	gal.	.57 -	.63
Methyl Ethyl Ketone	lb.	.11 -	.14
Methyl Isobutyl Ketone (dlvd.)	lb.	.13 -	.16
N-5 Pentane Mix* (t.c.)	gal.	— -	.13½
N-6 Hexanes* (t.c.)	gal.	— -	.14½
N-7 Hexanes* (t.c.)	gal.	— -	.13½
Penetrell*	gal.	.26½ -	.57
Petrolene* (t.c.)	gal.	— -	.14125
Picolines, Alpha, Refined	lb.	.43½ -	.44
Mixed	lb.	— -	.35
Proprietary Solvent (dms.)	gal.	.51 -	.72
Propyl Acetate (t.c., dlvd.)	lb.	— -	.10¾
Alcohol (t.c., dlvd.)	lb.	— -	.10
PT 150 Pine Solvent* (dms.)	gal.	— -	.44
Pyridine, Refined	lb.	— -	.75
Quinoline	lb.	.50 -	1.35
Rubber Solvent (t.c.)	gal.	— -	.16
Rubsol (t.c.)	gal.	— -	.12875
Skellysolve B (Hexanes)* (t.c.)	gal.	— -	.158
C (Heptanes)* (t.c.)	gal.	— -	.151
E (Octanes)* (t.c.)	gal.	— -	.165
R (Solvent Naphtha)*	gal.	— -	.129
Solvent, Crude, Light	gal.	.19 -	.28
Solvesso 100* (t.c.)	gal.	.33 -	.37
150 (t.c.)	gal.	.33 -	.37
Sunny South Dipentine*	gal.	.26½ -	.57
Sunny South Pine Oil*	gal.	.86⅝ -	1.04
Sunray*	gal.	.1140 -	.1600
Toluene (dms.)	gal.	— -	.38
Toluol (t.c.)	gal.	— -	.34
Trichlorethane	lb.	.13 -	.13½
Triglycol Dichloride	lb.	.63 -	.64
Union Thinner 1* (dms.)	gal.	— -	.204
3* (dms.)	gal.	— -	.204
5* (dms.)	gal.	— -	.194
7* (t.c.)	gal.	— -	.159
2-50 W Hi-Flash*	gal.	— -	.41
Xylol	gal.	.34 -	.38

STABILIZING AGENTS (for Vinyl) Resins)

Advastab No. 21*	lb.	1.00 -	1.08
50-LT*	lb.	3.20 -	3.35
BC-105*	lb.	.75 -	.80
E-6-B*	lb.	.80 -	.85
L Paste	lb.	.65 -	.70
X23-74*	lb.	.70 -	.80
X30-15*	lb.	.65 -	.75
Barca 10*	lb.	— -	.80
Barium Ricinoleate (BVS)	lb.	— -	.70
Barium Stearate	lb.	.37 -	.42
Basic Silicate White Lead	lb.	.18 -	.19
Cadmium Ricinoleate	lb.	— -	2.00
Calcium Ricinoleate	lb.	— -	.55
Dutch Boy DS-207*	lb.	— -	.54
Plumb-O-Sil A*	lb.	— -	.29¾
B*	lb.	— -	.31¼
Tribase*	lb.	— -	.26½
Dythal*	lb.	— -	.39½
Ferro 120* (dms.)	lb.	.73¼ -	.83¼
121* (dms.)	lb.	.68 -	.78
182* (dms.)	lb.	.74 -	.78
200* (dms.)	lb.	1.33 -	1.43
203* (dms.)	lb.	.94 -	.98
211* (dms.)	lb.	.65 -	.75
221* (dms.)	lb.	1.51 -	1.61
541* (dms.)	lb.	.35½ -	.39½
541A* (dms.)	lb.	.81¾ -	.85¾
620* (dms.)	lb.	— -	.77½
700* (dms.)	lb.	.48¾ -	.58¾
900* (dms.)	lb.	.90 -	.94
903* (dms.)	lb.	.65 -	.69
909* (dms.)	lb.	1.02¾ -	1.12¾
920*	lb.	— -	.98
931* (dms.)	lb.	.75¾ -	.85¾
1203* (dms.)	lb.	1.30 -	1.34
1206* (dms.)	lb.	1.23 -	1.27
1820* (dms.)	lb.	.90 -	.94
Harshaw 1-V-3*	lb.	— -	.43
1-V-4*	lb.	— -	.68
1-V-7*	lb.	— -	.66
2-V-4*	lb.	— -	.85
2-V-7*	lb.	— -	1.10
2-V-8*	lb.	— -	1.30
2-V-400*	lb.	— -	.80
5-V-1*	lb.	— -	.41
5-V-22*	lb.	— -	.49
7-V-1*	lb.	— -	.90
7-V-2*	lb.	— -	.95
7-V-4*	lb.	— -	1.18
8-V-1*	lb.	— -	1.10
8-V-5*	lb.	— -	.80
8-V-100*	lb.	— -	.84
9-V-1*	lb.	— -	.76
12-V-5*	lb.	— -	.75
22-V-1*	lb.	— -	1.28
24-V-1*	lb.	— -	1.28
28-V-2*	lb.	— -	1.18
128-V-5*	lb.	— -	.86
281-V-4*	lb.	— -	.90

SIMPLEX
REG. TRADE MARK

CUT 2500 FEET OF STRIP PER HOUR



The Simplex Model RB-2 is a new high speed, portable strip cutter that cuts efficiently and accurately.

U. S. Patent 2,294,497

The new Model RB-2 has a maximum cutting thickness of two inches, weighs 44.5 pounds, and is available in both A.C. and D.C. types. Manually operated, the machine is capable of cutting up to 20,000 feet of rubber strip in eight hours. A series of slits in the edge of the cutting blade carries water from a reservoir into the cut and not just to the top of the rubber being cut. This method lubricates the entire cut and produces a straight and even edge.

Simplex Cloth Cutting Machine Co., Inc.

Manufacturers of a Complete Line of Cloth Cutting Machinery

270 West 39th St. New York 18, N. Y.

Cable Address—SIMPLEX, N. Y. *Phone*—WIsconsin 7-5547

DO YOU MAKE...

Industrial Rubber Parts?

Insulated Wire?

Shoe Soles?

Tile?

Buy your Neoprene Grade magnesia from a SPECIALIST!

General Magnesite

will serve you with the widest range of quality magnesias:

GENMAG TECHNICAL EXTRA LIGHT CALCINED MAGNESIA	for excellent scorch resistance, high tensile and fast cures.
GENMAG ML TECHNICAL LIGHT 101	Two good low-cost magnesia values
HEAVY CALCINED MAGNESITE—	for Filler, Corrective and Extender
CARBONATE OF MAGNESIA, LIGHT—	fine and pure

GENERAL MAGNESITE AND MAGNESIA COMPANY

Manufactured at: Plymouth Meeting, Penn., *Phone:* Plymouth Meeting 3-2880, *Mailing Address:* Box 671, Norristown, Penn.

Lacquers for Rubber...

Manufacturers of quality lacquer products for industry, equipped to fill your lacquer needs quickly and economically.

CLEAR AND COLORED

- NEW, improved LACQUERS for Rubber Footwear, or any rubber product where lacquer is used as a pre-cure coating.
- SOLE and HEEL LACQUERS. Eliminate seconds by using our special pigmented lacquers. Can be supplied in any color desired.
- NCP 1909. An anti-tack coating. Spray or brush it on any tacky surface where powder is normally used to kill tack before cure.
- CASUALS, footwear. NCP 1909 is an excellent dulling and anti-tack agent on edges of soles or crepe wrappers used in the manufacturing of casual type footwear.
- SPECIAL lacquers for all types of rubber products.

Write for complete details

The National Chemical & Plastics Co.

1424 Philpot Street • Baltimore 31, Maryland

You make them

We road test them

On the most natural Proving Grounds in America—South Texas

This independent test fleet is located in Devine, Texas, some thirty-two miles southwest of San Antonio on U S Hiway 81. Sponsors have a choice of three routes from which to choose. Test procedures are flexible. Tire rotation, cycle miles, number and frequency of reports or routing, can be a basis for discussion if the sponsor so desires. We endeavor to operate to the best advantage of the sponsor. Because we are wholly independent of any organization, all information collected is responsible to the sponsor only.

Tires of all specifications tested—both passenger car and truck. Your inquiries will receive prompt attention.

SOUTH TEXAS TIRE TEST FLEET

Phone 301 DEVINE, TEXAS P. O. Box 95

A. J. (AL) Morrow, Owner-Manager

STABILIZING AGENTS (Cont'd)

Lithium Stearate	lb.	.57	.62
Metasap 613-A*	lb.	——	.69
613-B*	lb.	——	.84
613-C*	lb.	——	1.06
621*	lb.	——	.88
Modicol N*	lb.	.41½	.42½
S*	lb.	.30⅜	.31⅜
Sodium Silicates	cwt.	1.00	5.25
Stabelan E*	lb.	1.35	1.50
XL*	lb.	.55	.65
HR-50*	lb.	.75	.90
HR Liquid*	lb.	.65	.75
HR Paste*	lb.	.85	.95
HR Powder*	lb.	.95	1.05
Stabilizer No. 3*	lb.	1.90	2.00
No. 42*	lb.	.83	.93
No. 52*	lb.	1.90	2.00
No. 89X*	lb.	.75	.80
No. 143*	lb.	.80	.90
BC-12*	lb.	.87	.95
B-5*	lb.	——	.70
CH-14*	lb.	——	.65
CH-20*	lb.	——	.65
E6B*	lb.	——	.95
E-49*	lb.	——	.60
E-98*	lb.	——	.55
G-1*	lb.	1.25	1.40
HR*	lb.	.85	.89
JCX*	lb.	——	.63
L*	lb.	——	.60
OM-10*	lb.	——	1.95
OM-18*	lb.	——	3.25
SN*	lb.	——	.48
V-1-N*	lb.	——	.43
VL-3*	lb.	——	1.00
Staflex OY*	lb.	——	1.20
QXMA*	lb.	——	.70
Stayrite 10*	lb.	.32	.37
P-10*	lb.	.39	.44
15*	lb.	.53	.58
20*	lb.	.37	.42
22*	lb.	1.30	1.34
25*	lb.	.35	.40
70*	lb.	.68	.70
71*	lb.	.88	.90
75*	lb.	.68	.70
76*	lb.	.58	.60
80*	lb.	.68	.70
90*	lb.	.68	.70
95*	lb.	.68	.70
229*	lb.	.45	.50
Vanstav L*	lb.	.33	.35
H.T.*	lb.	.90	.92
S*	lb.	.65	.70

STIFFENING AGENTS

Calco S. A.*	lb.	.85	.88
Stiffening Agent 710*	lb.	——	.88

SUN CHECKING AGENTS

Allied AA-1144*	lb.	.23	.24
AA-1177*	lb.	.15½	.16½
Antisol*	lb.	——	.23
Antisun* (Chipped)	lb.	.15½	.17½
(Slabbed)	lb.	.15	.17
Heliozone*	lb.	.30	.31
Microflake*	lb.	.20	.24
NBC*	lb.	——	1.55
Ross Sunproofing Waxes*	lb.	——	.13½
Sonolite 100*	lb.	.17	.22
127*	lb.	.16½	.20½
154*	lb.	.23	.25
Sunproof*	lb.	.31	.32
713*	lb.	.25	.26
Improved*	lb.	.25	.26
Super*	lb.	.40	.41
Jr.*	lb.	.20	.21
Tonox*	lb.	.52	.54

SURFACE ACTIVE AGENTS

Aquarex D*	lb.	——	.7
MDL*	lb.	——	.33
ME*	lb.	——	. 0
NS*	lb.	——	.60
SMO*	lb.	——	.50
WAQ*	lb.	——	.22
Emulphor EL-620*	lb.	——	.40
Igepal CO-730*	lb.	——	.29
CO-850*	lb.	——	.29
CO-880*	lb.	——	.29
Igepon CN-42*	lb.	——	.25
T-77*	lb.	——	.49
Kessco 50201*	lb.	——	.43½
50203*	lb.	——	.44
18201*	lb.	——	.38
18203*	lb.	——	.35¼
Pluronic L62*	lb.	.33½	.39
L64*	lb.	.33½	.39
Sellogen Gel*	lb.	——	.12¾

TACKIFIERS

Arceo 620-32B*	lb.	.20	.21
716-30*	lb.	.18	.19
1041-21*	lb.	.16½	.17½
Bunaweld Polymer No. 780*	lb.	——	.24
No. 5514*	lb.	——	.35
Galex* (dms.)	lb.	.15¼	.18
Indopol H-300*	gal.	1.00	1.21
Koresin*	lb.	——	.95
Liquid Rubber Flux*	lb.	——	.14
Nilox* (c.l.)	cwt.	——	14.50
Resin V	lb.	——	.23½
Synthol*	lb.	——	.24¾
Tackifier 1041-21*	lb.	.16½	.17½
Vistac No. 1*	gal.	1.00	1.21
A*	lb.	.21½	.22¾
Zirex* (c.l.)	cwt.	——	14.75

THICKENERS (For Latex)

Alcozum AN-6*	lb.	——	.05
AN-10*	lb.	——	.08½
Betanol* (dms.)	lb.	.70	.95
Good-rite K-702*	lb.	.34½	.35
K-704*	lb.	.21	.22
K-705*	lb.	.31	.32
K-707*	lb.	.18	.19
K-708*	lb.	.29	.30
K-710*	lb.	.15	.16
Modicol VD*	lb.	.13⅜	.14⅜
VE*	lb.	.13⅜	.14⅜
Polyco 296 BT*	lb.	.15	.16
296-N*	lb.	.15	.16
530*	lb.	.15	.16
Propylene Laurate (dms.)	lb.	.57	.82
Sodium Silicate, 41°/1:3.2	cwt.	1.00	2.10

VULCANIZING AGENTS

Selenium

Vandex*	lb.	——	7.25

Sulfur

Aero Brand*	cwt.	——	2.40
Blackbird* (c.l.)	cwt.	——	2.85
Cloud* (c.l.)	cwt.	——	2.80
Crystex*	lb.	.19½	.23
Darex Dispersed Sulfur*	lb.	.14	.16
Devil A* (c.l.)	cwt.	——	2.40
Dispersed Sulfur	lb.	.14	.16
Insoluble Sulfur 60*	lb.	.12½	.13
Ko-Blend IS*	lb.	——	.39
Mist* (Wettable) (c.l.)	cwt.	——	4.00
Spider* (c.l.)	cwt.	——	2.80
Star* (c.l.)	cwt.	——	3.25
Sulfasan R*	lb.	——	1.50
Tire* (c.l.)	cwt.	——	2.40
Tube* (c.l.)	cwt.	——	3.25
Vultac 2*	lb.	.47	.49
3*	lb.	.51	.53

VULCANIZING AGENTS (Cont'd)

Tellurium

Telloy*	lb.	——	2.50

WETTING AGENTS

Advawet No. 10*	lb.	——	.20
No. 33*	lb.	——	.48
Aerosol 18*	lb.	——	.40
AY*	lb.	1.00	1.20
MA 80%*	lb.	.67	.72
OT 75% Aqueous*	lb.	.63	.68
OT 100%*	lb.	1.00	1.20
Alrosal* (dms.)	lb.	——	.40
Alrosperse*	lb.	——	.18
Areskap 50*	lb.	.30	.38
Dry 100*	lb.	.60	.72
Aresket Dry 300*	lb.	.60	.72
Aresklene 375*	lb.	.42	.57
Armacs*	lb.	.28	.77
Arquads*	lb.	.24	.60
Emcol 5100* (dms.)	lb.	——	.30
5130* (dms.)	lb.	——	.30
Etho-Chemicals*	lb.	.26	.58
Kesco E-122* (dms)	lb.	——	.45
18201*	lb.	——	.38
Krelson 8G* (dms.)	lb.	.26	.32
Lecithin	lb.	.13	.17
Modicol N*	lb.	.41½	.42½
S*	lb.	.30⅜	.31⅜
Orvus AB Granules*	lb.	.16	.17
Parnol*	lb.	.13	.18
Selapon Gel*	lb.	——	.13
Santomerse D*	lb.	.44	.65
S*	lb.	.13	.25
Sorapon SF-73*	lb.	——	.18
SF-78*	lb.	——	.30
Sorbit P*	lb.	——	.28
Stablex G*	lb.	.50	.70
Tergitol 4* (dms., dlvd.)	lb.	.32	.33
7* (dms., dlvd.)	lb.	.43	.44
O8* (dms., dlvd.)	lb.	.31	.32
P28* (dms., dlvd.)	lb.	.18½	.19
Trenamine W-30	lb.	——	.15
Vultamol*	lb.	——	.17½
Wetsit Conc.*	lb.	.25	.28

MISCELLANEOUS CHEMICALS

Aquarex G*	lb.	——	.21
Aquesperse 30*	lb.	——	.11
Arcopel W-18*	lb.	.17	.19
Copper Inhibitor X-872-L*	lb.	——	2.01
D-Tac*	lb.	——	.22
2-Ethyl Hexanol	lb.	.23¾	.24¼
Fura-Tone Resin 1226*	lb.	.41	.43
MODX*	lb.	.32½	.34½
BF*-13	lb.	——	.26½
Nullapon B-F-13*	lb.	——	.26½
BF-78*	lb.	——	.61½
Para Resin 2457*	lb.	.04	.04½
2702*	lb.	.04	.04½
2718*	lb.	.04	.04½
Pigmented Filmite* (dlvd.)	lb.	——	.16¾
Resorcin, Tech.	lb.	.77½	.78½
Rio Resin*	lb.	.60	.62
Rongalite CX*	lb.	——	.21½
Sherosope F*	lb.	.15½	.17¾
F-455*	lb.	.13½	.15¾
L*	lb.	.14	.16¼
N*	lb.	.15	.17¼
T*	lb.	.16½	.18¾
Sublac Resin PX-5*	lb.	.23½	.24½
Sulfasan R*	lb.	——	1.50
Synpep*	lb.	.54	.60
Thickol LP-2*	lb.	.96	2.06
LP-3, LP-32, LP-33*	lb.	.96	1.06
LP-8, LP-38*	lb.	1.25	1.37½
Tysonite*	lb.	.24	.24¾
Vanfre*	gal.	2.50	3.00

BOOKS for Technical Men

LATEX IN INDUSTRY by Royce J. Noble — **PRICE: $15.00* (postpaid-U.S.)**

RUBBER: NATURAL AND SYNTHETIC by H. J. Stern — **PRICE: $12.00* (postpaid)**

LATEX AND RUBBER DERIVATIVES—Vols. II & III by F. Marchionna — **PRICE: $10.00* (postpaid)**

ANNUAL BIBLIOGRAPHY OF RUBBER LITERATURE: 1946-1948 EDITION — **PRICE: $7.50* (postpaid)**

RECLAIMED RUBBER by John M. Ball — **PRICE: $5.00* (postpaid-U.S.)**

Add 3% for New York City Addresses

Available from RUBBER AGE

101 West 31st St., New York 1, N. Y.

CLASSIFIED WANT ADS

RATES:

All Classifications (except Positions Wanted):
12c per word in light face type—Minimum, $5.00
18c per word in bold face type—Minimum, $5.00
Positions Wanted: (Light face type only)
$1.00 for 25 words or less; extra words, 5c each.
When Box Number is used, add 5 words to word count

Heading on separate line, $1.20 in light face; $1.80 in bold face.
Advertisements in borders: $20.00 per column inch; maximum, 85 words per inch.
All Classified Advertising must be paid in advance except for advertisers on contract. Send check with copy.
Replies to keyed advertisements will be forwarded to advertiser without charge.

Address all replies to Box Numbers care of RUBBER AGE, 101 West 31st St., New York 1, N. Y.

Copy for July, 1955, issue must be received by Friday, July 1st.

POSITIONS WANTED

PRODUCTION ENGINEER desires new connections. Competent as technical director, process or project supervisor. Broad practical experience in mechanicals, sponge rubbers and extrusion-compression moldings of plastics. Address Box 419P, RUBBER AGE.

RUBBER SALES, molded specialties, age 35, college graduate, experience in government rubber research, sales experience both inside and out. Familiar with all parts of plant operations: Tooling, presses, quality control, application problems, sales liaison, correspondence, quotations, contract negotiations. Can fill any gap in field sales, sales administration or customer relations. Aggressive, selective thinker. Can separate the money makers from the duds. Previously located with N. N.E. manufacturer. Address Box 406-P, RUBBER AGE.

PLANT MANAGER—CHEMICAL ENGINEER. Eleven years with major rubber company, desires management opportunity in Northeastern area. Presently managing factory producing footwear, tire repair materials, molded and foam goods. Age 35, married. Available July. Resumé on request. Address Box 407-P, RUBBER AGE.

MANAGEMENT EXECUTIVE, experience as plant manager, technical service, development in United States and Foreign countries. Seeking management or executive trainee opportunity in medium size company. American, 35 years, married. Resumé on request. Address Box 408-P, RUBBER AGE.

RUBBER CHEMIST—B.A. degree, bilingual. Progressive individual with 13 years experience in wire and cable industry, thoroughly familiar with development and factory process supervision. Interested primarily in securing position in progressive company wherein experience and cultural background would be an asset. Would consider relocating in Spanish speaking country. Address Box 416-P, RUBBER AGE.

RUBBER TECHNICIAN and production manager interested in securing new position. Have fifteen years experience in all phases of molded and extruded goods, including development, planning and management. Responsible position with progressive manufacturer desired. Address Box 417-P, RUBBER AGE.

RUBBER and latex chemist with broad experience in all types synthetic and natural elastomers. Knows latex emulsion and rubber compounding. Capable and experienced in management, production and general latex compounding. Address Box 418-P, RUBBER AGE.

If you're phoning or writing

RUBBER AGE

remember, we've moved to:

101 West 31st Street,
New York 1, N. Y.
Phone: PEnnsylvania 6-6872

HELP WANTED

RUBBER AND PLASTICS

Rubber Chemist, sponge experience desirable, plant or laboratory.
Rubber Chemist, general compounding and plant experience desirable.
Plastics Chemists or Engineers, laboratory and plant experience desirable.
Quality Control Supervisor, capable of installing new department.
Expanding Operation
Opportunities for Advancement
Salaries open. Details on request.
Write: Dale A. Dougherty
Assistant to the President
O'SULLIVAN RUBBER CORPORATION
Box 603, Winchester, Virginia

CHEMIST—ADHESIVES. Desire man with extensive lab and field experience in compounding latex, thermoplastics, or synthetics. Salary open and excellent opportunity with fast growing, medium sized company. Write full details. FEDERAL LATEX CORP., 210 Wythe Ave., Brooklyn, N. Y.

MECHANICAL GOODS MOLD DESIGNER

Mechanical Rubber Goods Division of a Tire and Rubber Company in Ohio requires an experienced mechanical mold designer for a permanent position. Write giving full particulars regarding age, experience, education, and salary expected. Replies held confidential. Address Box 398-W, RUBBER AGE.

SPONGE RUBBER CHEMIST

Graduate chemist required having a minimum of three years intensive compounding experience in automotive sponge with both closed and open-cell sponge. An opportunity for the man who can produce, is cost and production conscious. Address Box No. 409-W, RUBBER AGE.

A position as Assistant Sales Manager is open with a leading midwest rubber manufacturer of custom molded rubber parts, O-rings, hydraulic seals and silicone. A successful record selling to the rubber industry, mechanical experience, good earning record, some advertising experience, as well as a technical education is essential. Factory or laboratory experience would be helpful. Write details concerning experience, age, education, earning record, references, etc. All replies will be kept strictly confidential. Address Box 410-W, RUBBER AGE.

ASSISTANT PLANT MANAGER

Nationally well known New Jersey concern seeks a chemical or mechanical engineering graduate with 10 to 12 years experience in the manufacturing of calendered and molded rubber and vinyl products. A fine opportunity for the right man. Resumé stating salary and qualifications. Address Box 411-W, RUBBER AGE.

LATEX CHEMIST

B.S. in chemistry or chemical engineering. Some experience in latex field preferred but not necessary. Good opportunity for laboratory work in expanding foam rubber plant of nationally known company. Eastern location. Write giving age, education and experience. Replies kept in confidence. Our employees know of this advertisement. Address Box 413-W, RUBBER AGE.

CHEMIST — CHEMICAL ENGINEERS
"Positions with the better firms"

An active, confidential service!
Interview at your convenience!

"Many Junior Positions"
Call, write, or wire:—GLADYS HUNTING (Consultant)

DRAKE PERSONNEL, INC.
7 W. Madison St., Chicago 2, Ill., FI 6-2107

"Help Wanted" continued on next page

ROTEX SCRAP
BUYING AND SELLING

RUBBER
Uncured Stocks
Scorched Compounds
Cured Overflow
Graded to specification

PLASTICS
Vinyl — Polyethylene
Bought — Graded — Sold
Cuttings, trimmings, Overflow,
Slabs, Lumps, Discontinued Lots

SERVICES
Mill-Compounding
Extruding — Pelletizing
Cutting — Grinding
Separating, Coloring

ROTEX RUBBER COMPANY, INC., 1-23 JABEZ ST., NEWARK 5, N. J. • TEL. MARKET 4-4444

HELP WANTED—Continued

CHEMIST—LATEX COMPOUNDS

Long established and progressive manufacturer desires chemist with experience in compounding natural and synthetic latices. Position offers excellent opportunity in laboratory carrying out new product development and application work. Please give details of experience, education and salary desired.
Our employees have been informed of this advertisement.

Address Box 379-W, RUBBER AGE

CHEMIST—Up to five years experience compounding natural and synthetic rubbers. Knowledge of fabric coating by calender and spreader helpful. Give complete resumé including salary desired in first letter. Eastern location. Address Box 414-W, RUBBER AGE.

TECHNICAL SERVICE

Position available for graduate engineer to handle technical service activities to tire industry. Applicants should be 30-35 years old with about 5 years experience in tire design and construction. Familiarity with both passenger and truck tires desirable. Location Central Eastern Seaboard.

Write full details on age, education, experience. Replies will be kept strictly confidential.

Address Box 412-W, RUBBER AGE

PLASTICS AND ELASTOMER COMPOUNDING AND TESTING

B.S. or M.S. familiar with compounding and testing variety of elastomers and plastics. Experience in formulation and testing of natural and synthetic rubbers desirable. Successful candidate will be responsible for activities in this field. Modern facilities. Position offers excellent prospects for growth and advancement to men with initiative and ability. Please submit complete details in first letter.

Manager, Personnel Planning
Wyandotte Chemicals Corporation
Wyandotte, Michigan

RUBBER CHEMIST

If you are now (or have been in the recent past) actively engaged in rubber chemistry and like the challenge presented by the opportunity to write for a technical publication, you may be the man we need.

You should have had about three to five years plant experience, be about 30 years of age, and want to work in the New York City area for a progressive technical journal. You should have the ability to express your thoughts clearly, be able to interpret technical material and be able to meet and talk freely with people.

Your work will be editing and originating technical material. You will work in a relatively small organization devoted to a single field. Surroundings and working conditions are pleasant and future prospects are good.

Your reply will be held in absolute confidence. If you are interested, please write stating education, experience, salary desired. Send recent snapshot.

Address Box 420-W, RUBBER AGE

HELP WANTED—Continued

PRODUCTION MANAGER

RUBBER TECHNOLOGIST

Opportunity with abrasive manufacturer located in Middle Atlantic States. Experience with development and supervision of production methods for rubber bonded grinding and cut-off wheels required. Salary open. Send resumé to—

K-22 P. O. Box 3414
Philadelphia 22, Pa.

WE BUY AND SELL

•SCRAP RUBBER •CRUDE RUBBER •HARD RUBBER DUST •PLASTICS

BEST IN VALUE AND SERVICE

George Woloch co., inc.
82 Beaver Street • New York 5, N. Y.
Phone: HAnover 2-1171
Cable Address: GEOWOLOCH, N Y

BRANCH OFFICES
AKRON, Ohio
SWandale 4-5237

LONDON, England
50 Gamage Bldg.
Chancery 5038
Curtis-Woloch Co Ltd.

PROCESSING PLANT • KENILWORTH, N. J. • PHONE: CHESTNUT 5-8939

Carey

MAGNESIA

Oxides and Carbonates Light and Heavy—Tech. and U. S. P. Quality

Have you considered the advantages of Carey Pelletized Oxide of Magnesia packed in Polyethylene Bags—comparatively dust-free, with greater activity, longer package life?

THE PHILIP CAREY MFG. COMPANY
CINCINNATI 15, OHIO
Offices and Distributors in all Principal Cities

Lowest Priced
WATERGROUND
MICA

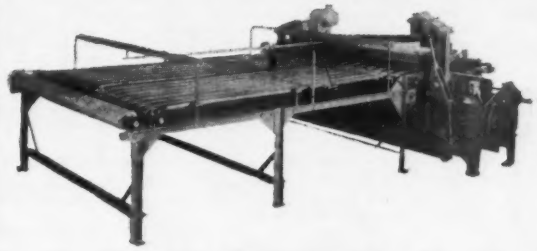
Our White and Biotite Waterground Micas have been preferred in the Rubber Industry for years.

Biotite Waterground Mica is the lowest priced WATER-GROUND Mica on the market.

The English Mica Co.
STERLING BUILDING · STAMFORD, CONN.

ALFA AUTOMATIC STOCK CUTTER....

ACCURATE, CLEAN, SQUARE CUTS



Designed to efficiently handle most cutting problems, the Alfa Stock Cutter is extensively used throughout the Rubber, Plastic and Textile industries—for cutting such materials as: tiling and soling stock, foam, sponge and sheet rubber, cotton battings, sisal fibre glass and insulation. This highly versatile cutter can be used in continuous production line systems, or as a single unit for feed from a parent roll.

We invite your inquiries. Whatever the cutting problem may be —we have standard or special designs to meet most requirements.

SPADONE MACHINE CO. INC.

SOUTH NORWALK, CONNECTICUT Phone: VOlunteer 6-1087

STEEL CALENDER STOCK SHELLS

ALL STEEL, ALL WELDED CONSTRUCTION, with forged steel hubs for 1¼", 1½" and 2" square bars. 4", 5", 6", 8", 10", 12", 15", 20" and 24" diameters. Any length.

Also Special Trucks (Leaf Type) Racks, Tables and Jigs, Used in manufacturing rubber and plastic products.

THE W. F. GAMMETER COMPANY
CADIZ, OHIO

RMP ANTIMONY FOR RED RUBBER

- ATTRACTIVE
- NON-DETERIORATING

RARE METAL PRODUCTS CO.
ATGLEN, PA.

softeners and plasticizers for rubber from the pine tree

ROSIN OIL • PINE TAR
BURGUNDY PITCH
GALEX a non-oxidizing RESIN

Send for "Pine Tree Products" Booklet

NATIONAL ROSIN OIL PRODUCTS, Inc.
Americas Bldg., Rockefeller Center, 1270 Ave. of the Americas, New York 20
Refinery, Savannah, Ga. • Branches in Principal Cities

PIONEERS OF THE INDUSTRY

Mold Lubricants

Silicones • Non-Silicones

We blend the mold lubricant to the job. Tell us your molding problems. We have a wide variety of standard lubricants from which to choose the one for your job.

Write today for technical data and price lists.

Stoner's Ink Company
Quarryville, Pa.

They'll--
QUICKLY PAY FOR THEMSELVES
--in your plant

- HOLMES ROTARY STOCK CUTTER
- HOLMES HYDRAULIC PRESSES
- HOLMES CRUDE RUBBER BALE CUTTER
- HOLMES HYDRAULIC PUMPING UNIT
- HOLMES SPONGE RUBBER VULCANIZING PRESS

Write for Details

Stanley H. HOLMES Company
Since 1901
3300 WEST LAKE STREET • CHICAGO 12, ILLINOIS

Hakuenka imparts to Natural and Synthetic Rubber High Tensile Strength, High Resistance to Tear and Abrasion, Low Modulus, Smooth, Fast Extrusion

HAKUENKA

Special attention to Export Trade
SHIRAISHI KOGYO KAISHA, LTD.
Kitahama, Osaka, Japan

Directory of CONSULTANTS

R. R. OLIN LABORATORIES
Rubber Technologist—Development and research in Natural Rubber, Synthetic Rubber and Plastics. Also chemicals and compounding materials used with these materials.
P.O. Box 372 RA, Akron 9, Ohio

SOUTH FLORIDA TEST SERVICE
(Established 1931)
Corrosion, weathering and sunlight tests. Four locations in Southern Florida for inland, salt atmospheric, tidewater and total immersion exposure tests.
4201 N. W. 7th St., Miami, Florida

PHILIP TUCKER GIDLEY
Consulting Technogolist—Research, product development, formulas, factory plans, engineering, chemical and physical testing.
Fairhaven, Massachusetts

HALE AND KULLGREN, INC.
Specialists in Process and Plants for Rubber and Plastics
A Complete Engineering Service: including: Economic Surveys; Process Design; Installation; Contracting and Operation.
613 E. Tallmadge Ave., Akron 10, Ohio

HOWE MACHINERY CO., INC.
30 Gregory Avenue, Passaic, N. J.
DESIGNERS & BUILDERS
OF "V" BELT MANUFACTURING EQUIPMENT
Cord Latexing, expanding mandrels, automatic cutting, skiving, flipping and roll drive wrapping machines
ENGINEERING FACILITIES FOR SPECIAL EQUIPMENT
Call or Write

MIXING
To Your Specification
K. B. C. INDUSTRIES, INC. NEW HAVEN, CONN.
881 State St. Tel: State 7-5662
Otto J. Lang, General Manager

Engineered Application of Heat in Continuous Materials Handling Systems
INDUSTRIAL OVENS, INC.
13825 TRISKETT ROAD, CLEVELAND 11, OHIO

BUSINESS OPPORTUNITIES

CUSTOM MIXING, GRINDING and DISPERSION. Production time available on Rotary Cutters, Colloid Mills and explosion-proof Churns with attached filtering mediums. At your service—the technical know-how and completely equipped control laboratory. ADHESIVES & COATING SPECIALTIES, INC., Bldg. #22, 410 Frelinghuysen Ave., Newark 5, N. J.

Wanted for resale in Europe: Industrial single wire braid hose and industrial double wire braid hose. Please address offers with prospectus and possibly samples to Box OFA 23857 A, Orell Fussli-Annonces, Basle (Switzerland).

LATEX OFFERED subject to prior sale. 15,000 gallons centrifuged 60-62% latex, guaranteed July delivery. Bulk or drums. Write best price offered. Address Box 415-B, Rubber Age.

BLACK
Master Batching
Mixing of all kinds
BESTREAD PRODUCTS CO. STOUGHTON, MASS.

Custom Mixing
RUBBER-PLASTICS
We do milling and compounding of all types—black or color—master batches
All mixing done under careful supervision and laboratory control.
Phone: Butler 9-0400

Pequanoc Rubber Co.
MANUFACTURERS OF RECLAIMED RUBBER
MAIN SALES OFFICE and FACTORY, BUTLER, N. J.

Add any new products to your line since you sent in your forms for the 1955-56 RUBBER RED BOOK?

Be sure to notify RUBBER AGE *promptly of all changes.*

RUBBER AGE 101 W. 31st St., New York 1, N. Y.

Telephone—PEnnsylvania 6-6872

EQUIPMENT WANTED

WANTED: Used molds for Heels, Neolite Soles, Household Mats, Bathtub Mats, and similar items. If possible, submit samples of recent production for each type mold. VICTORIA TEXTILE FABRICS, 395 Broadway, New York 13, N. Y.

LABORATORY BANBURY MIXER in good condition. Please state price and give location of equipment for inspection during June. Contact: A. H. Selker, KAISER ALUMINUM & CHEMICAL CORP., Department of Metallurgical Research, Spokane 69, Washington.

WANTED: 2 or 3 roll calender. Roll length minimum of 44". Complete with all necessary drives and controls. Will pay cash. ALLIED RUBBER PRODUCTS, 2000 E. Vernor, Detroit 7, Michigan.

EQUIPMENT FOR SALE

FOR SALE: 1—6" x 12" laboratory mill, m.d.; 1—B & J rotary cutter, Model O, m.d.; 1—Royle #4 extruder, motor driven; 2—Baker-Perkins size 15, 100-gallon jacketed mixers; 5—horizontal dry powder ribbon mixers, 4000#, 1500#, 500#; 1—new 3-roll 6" x 16" laboratory calender, m.d.; 1—Farrel-Birmingham 60" mill with reduction drive, 150 HP motor, floor level mounting; 1—Fitzpatrick "D" comminutor, s.s. contact parts jacketed; 1—Mikro-Pulverizer #2TH, with motor; 4—Reed-Prentice & WS injection molding machines, two 16 oz.; also other sizes Hydraulic Presses, Tubers, Banbury Mixers, Mills, Vulcanizers, Calenders, Pellet Presses, Cutters. WANTED: Your Surplus Rubber Machinery. CONSOLIDATED PRODUCTS COMPANY, INC., 70 Blcomfield St., Hoboken, N. J. HOboken 3-4425; N. Y. Phone: BArclay 7-0600.

FOR SALE—1 Stewart Bolling 8" x 16" 3-roll vertical calender, M.D.; 1—4' x 12' vulcanizer Q.O. door; 1—Thropp 6" x 16" lab. mill; 1—Royle #1 extruder, M.D.; also presses, cutters, Banburys, etc. CHEMICAL & PROCESS MACHINERY CORP., 146 Grand St., New York 13, N. Y.

Hydraulic presses and pumps rebuilt, repaired. New presses from laboratory up to 1000 tons. Pumping units up to 10,000 p.s.i., all capacities. CLIFTON HYDRAULIC PRESS CO., 290 Alwood Rd., Clifton, New Jersey.

SAVE WITH GUARANTEED REBUILT EQUIPMENT: 2 New R. D. Wood 500 ton embossing presses; 54" x 26" platen, HYDRAULIC PRESSES; 40" x 54", 36" ram, 1500 tons; 30" x 26", 16" ram, 600 tons; 2—27" x 27", 18" rams, 585 tons; 20" x 20", 10" ram, 200 tons; 20" x 20", 14" ram, 200 tons; 15" x 15", 8" ram, 75 tons; 14" x 14", 8" ram, 75 tons; 2—19" x 24", 10" rams, 78 tons; 18" x 18", 7" ram, 50 tons; 10—26" x 26", 7" rams, 50 tons; 12" x 12", 7½" ram, 50 tons; 14" x 14", 8" ram, 50 tons; 8" x 9½", 4½" rams, 20 tons; 16" x 16", 3½" rams, 12 tons; Carver model 150 and 6" x 6" LABORATORY PRESSES; Stokes Model T, late type with drive; Stokes Model T, late type with hydraulic equalizer system and drive; Colton 5½T with drive PREFORM PRESSES; NEW UNIVERSAL DUAL PUMPING UNITS, 3-15 HP; NEW LABORATORY MILLS and CALENDERS; HPM 6" ram, 2500# pressure ACCUMULATOR; also Extruders, Mixers, Vulcanizers, Injection Molding Units, etc. UNIVERSAL HYDRAULIC MACHINERY COMPANY, INC., 285 Hudson Street, New York 13, N. Y.

HYDRAULIC PRESSES: Elmes 1000 ton Hobbing Press, M-D pump. Erie 4000 ton and Baldwin-Southwark 3600 ton Belt Presses. Birdsboro 2000 ton, Farrel 1000 ton, HPM 750 ton, Watson-Stillman and HPM 100 ton, HPM 35 ton Molding Presses. Watson-Stillman 30 ton Lab Presses. Stokes Model 200 D-3 and Model 235 automatic Presses. Stokes 200 ton, 150 ton and 100 ton semi-automatic Presses.

INJECTION MOLDING MACHINES: Various makes, 2 oz to 22 oz.

EXTRUDERS: Lab type, 1" electrically heated; Royle #1 Rubber Extruder and Larger.

TABLET MACHINES: Stokes, R, T, RDS-3 and Colton #5 and #5½.

MISCELLANEOUS: Baker-Perkins 2¼ gallon Mixer, MPM Pelletizer, B and J 1 HP Rotary Cutter, Mills, Calenders, Grinders, Pumps, Valves, Platens, etc.

JOHNSON MACHINERY COMPANY
683-R Frelinghuysen Avenue — Newark 5, New Jersey
Bigelow 8-2500
WHAT HAVE YOU FOR SALE? — **WHAT ARE YOU LOOKING FOR?**

The French Rubber Journal

REVUE GENERALE DU CAOUTCHOUC

42, rue Scheffer. Paris 16. France
Monthly Magazine established in 1924

Deals with all that concerns rubber. Up to date on every problem of the day. Also monthly French and Foreign rubber bibliography.

Subscription rate: 3500 Francs a year
Price per copy: 400 Francs

Free sample copy on request

Any changes in the information you submitted for the 1955-56 RUBBER RED BOOK?

Notify RUBBER AGE TODAY

RUBBER AGE — 101 W. 31st St. New York 1, N. Y.
Phone: PEnnsylvania 6-6872

USED MACHINERY FOR SALE

1—Baldwin 5' x 6' horizontal Vulcanizer, quick opening door, ASME 150 psi.

1—National Rubber Machinery Company—2½" Plastic Extruder, jacketed for hot oil.

1—Banbury "midget" lab. size mixer with 2 H.P. gear motor

1—Banbury Size B Mixer, with 25 H.P. 4 speed motor and accessories.

1—Calender Mill 2 roll 12" x 24"w/motor drive.

We are interested in purchasing individual items and complete plants.

R.GELB & SONS Inc.
STATE HIGHWAY No.22, UNION, N.J.
MURDOCK-6-4900

LA GOMA

Monthly Technical Journal
The First Rubber Journal in Spain
Founded: January, 1929

Founder, owner, director and administrator:
Juan Blanch Guerrero

Calle de Moncada, 4, tienda, Barcelona, Spain

Annual Subscription:

Spain ..... 100 pesetas
Foreign ..... 125 pesetas

THE **DAILY** GUIDE

This is indispensable to buyers of Rubber

THE TRADE NEWS SERVICE

Established 1915

24 Stone St. — **New York 4, N. Y.**

featuring

MARKET REPORTS • RUBBER IMPORTS • STATISTICS

Write for Free Trial Service

Need Additional Equipment?
Advertise in the Classified Section of
RUBBER AGE

NATIONAL SHERARDIZING & MACHINE CO.

AIR BAG BUFFING MACHINERY
STOCK SHELLS HOSE POLES
MANDRELS

858 Windsor St., Hartford, Conn.

Representatives: Akron New York

THE AKRON RUBBER MACHINERY CO. INC.
"ARMACO"
New Rubber & Plastics Machinery
ALSO
A complete stock of used reconditioned guaranteed machinery for rubber & plastic.
Phone HE 4-9141 **P. O. Box 88 Akron 9, Ohio**

1—18″ x 50″ Farrel mill with motor and drive
2—16″ x 42″ Farrel mills with motor and drive
5—400 ton Hydraulic presses—24″ x 24″
1—350 ton Hobbing press
1—Vulcanizer with quick opening door—4′ dia. x 13′6″ long
1—Auto-Clave with quick opening door—6′ dia. x 5′ high
New 6″ x 12″ Laboratory mills
New 8″ x 18″ mills

Mills from Laboratory size to 50″ in stock.
Presses from 75 ton to 1000 ton in stock.

We specialize in rebuilding rubber and plastics machinery.
All of our rebuilt machinery is guaranteed.
Buying and Selling.

Reliable
RUBBER & PLASTIC MACHINERY CO., INC.
2014 UNION TURNPIKE NORTH BERGEN, N. J.
PHONE: UNION 5-1073

If you're phoning or writing

RUBBER AGE

remember, we've moved to:

101 West 31st Street,
New York 1, N. Y.
Phone: PEnnsylvania 6-6872

THE NAME TO REMEMBER
FOR PRECISION

McNEIL
AKRON

Manufacturers of the World's
Finest Rubber Curing Equipment

KAUTSCHUK UND GUMMI

Official Journal of the German Society of Rubber Chemists and Technologists (Deutsche Kautschuk-Gesellschaft e.V.) the most quoted and authoritative German Rubber Journal.

KAUTSCHUK UND GUMMI promotes international exchange of ideas concerning economic, technical and scientific problems involved in the different phases of the manufacture of rubber and asbestos products. Business experts and authorities in science and technology supply facts, opinions and research results. Reports and information from the industry's various associations are included.

KAUTSCHUK UND GUMMI is an excellent advertising medium which speaks to just those firms in the import and export trade to whom you want to speak. Specimen copy and advertising rates on application to the publishers.

KAUTSCHUK UND GUMMI
Berlin - Borsigwalde • Frankfurt am Main

Any Changes in Your
Products
Services
Materials
Personnel
since you sent in your RUBBER RED BOOK forms?
The new 1955-56 edition
is now being compiled.
Please notify us promptly
of any changes.

RUBBER AGE
101 West 31st St., New York 1, N. Y.
Telephone: PEnnsylvania 6-6872

NEW and REBUILT MACHINERY
SINCE 1891
L. ALBERT & SON
Trenton, N. J. **Akron, O.** **Chicago, Ill.** **Los Angeles, Calif.**

WILLIAM TAPPER

USED RUBBER WORKING MACHINERY

Mills
20″ x 22″ x 60″
20″ x 20″ x 72″
26″ x 26″ x 84″
24″ x 66″ — 3-roll calender
#3 Banbury
New Guillotine Bale Cutters
We Build New Lab Mills: 6″ x 12″ and 8″ x 16″
WE PAY CASH FOR YOUR SURPLUS MACHINERY

30 South Broadway, Yonkers, N. Y.

PHONE: YONKERS 3-7455
CABLE: WILTAPPER YONKERS, N. Y.

Index to Advertisers

Accurate Steel Rule Die Manufacturers 457
Adamson United Co. ..... —
Aetna-Standard Engineering Co. 333
Akron Equipment Co. 448
Akron Rubber Machinery Co. 472
Albert, L., & Son 472
Alco Oil & Chemical Corp. 459
Allied Chemical & Dye Corp. 379
American Cyanamid Co.
Intermediate & Rubber Chemicals Dept. .. 351
Pigments Div. 361
American Enka Corp. ..... —
American Maintenance Supply Corp. ..... —
American Rayon Institute, Inc. ..... —
American Resinous Chemicals Corp. ..... —
American Steel Foundries 449
American Zinc Sales Co. ..... —
Ames, B. C. Co. ..... —
Argus Chemical Corp. 381
Atlas Electric Devices Co. ..... —

Bell Kaolin 447
Bestread Products Co. 470
Binney & Smith, Inc. ....Insert Following 416
Black Rock Manufacturing Co. 453
Bolling, Stewart, & Co., Inc. ..... —
Bonwit, Eric ..... —
Bridgwater Machine Co. ..... —
Brockton Cutting Die & Machine Co. 453
Brooklyn Color Works, Inc. ..... —
Brown Co. 350

Cabot, Godfrey L., Inc. 355, 383
Cambridge Instrument Co., Inc. ..... —
Carter Bell Manufacturing Co. 443
Carey, Phillip Manufacturing Co. 468
Century Products Co. 461
Chemical Publishing Co., Inc. ..... —
CLASSIFIED ADVERTISING 467-72
Cleveland Liner & Manufacturing Co. 382
Clifton Hydraulic Press Co. 471
Columbia-Southern Chemical Corp. 366
Columbian Carbon Co. .....Insert Following 416
Consolidated Products Co. 471
CONSULTANTS SECTION 470
Continental Carbon Co. ..... Insert Following 374
Continental Machinery Co., Inc. ..... —
Coulter, James, Machine Co. ..... —
Cumberland Engineering Co., Inc. 372

D. P. R., Inc. 447
Darlington Chemicals, Inc. 455
Davis-Standard Sales Corp. ..... —
Dayton Rubber Co. 463
Diamond Alkali Co., Pure Calcium Prod. Div. 344
Dow Corning Corp. ..... —
Drake Personnel, Inc. 467
du Pont de Nemours, E. I., & Co., Inc.
Elastomers Div. .....Second Cover
Durez Plastics & Chemicals, Inc. 352

Emery Industries, Inc. 341
English Mica Co. 468
Enjay Co., Inc. 377
Erie Engine & Manufacturing Co. 455
Erie Foundry Co. 354

Falls Engineering & Machine Co. ..... —
Farrel-Birmingham Co., Inc. 343, 369
Ferry Machine Co. ..... —
Flexo Supply Co., Inc. ..... —
Flightex Fabrics, Inc. 455
French Oil Mill Machinery Co. ..... —

Gammeter, W. F., Co. 469
Gelb, R., & Sons, Inc. 471
General Latex & Chemical Corp. 451
General Magnesite & Magnesia Co. 465
General Tire & Rubber Co. 367
Genseke Brothers ..... —
Gidley, Philip Tucker 470
Giffels & Vallet, Inc. 374
Glidden Co.
Chemicals-Pigments-Metals Div. ..... —
Goodman, G. F., & Son ..... —
Goodrich, B. F., Chemical Co. 331
Goodyear Tire & Rubber Co.
Chemical Div. 334, 335
Gross, A., & Co. 438
Gummi und Asbest ..... —
Gussett Boiler & Welding, Inc. ..... —

Hale & Kullgren, Inc. 333, 470
Hall, C. P., Co. 370
Harchem Div. 359
Harshaw Chemical Co. 371
Harwick Standard Chemical Co. .....Back Cover
Hercules Powder Co., Inc. ..... —
Heveatex Corp. ..... —
Hoggson & Pettis Manufacturing Co. ..... —
Holliston Mills, Inc. 381
Holmes, Stanley H., Co. 469
Howe Machinery Co., Inc. 470
Huber, J. M., Corp. 336

Independent Die & Supply Co. 459
Indoil Chemical Co. ..... —
Industrial Ovens, Inc. 470
Institution of the Rubber Industry ..... —

Johnson Corp. ..... —
Johnson Steel & Wire Co., Inc. ..... —
Johnson Machinery Co. 471

Kautschuk und Gummi 472
K. B. C. Industries, Inc. 470
Kenrich Corp. ..... —
Koppers Co., Inc. 463

La Goma 471
Lambert, E. P., Co. ..... —
Lehman, J. M., Co., William R. Thropp
& Sons Div. ..... —
Liquid Carbonic Corp. ..... —

Marbon Chemical Div. 339
Maryland Cork Co., Inc. ..... —
McNeil Machine & Engineering Co. 477
Meyercord Co. 461
Molded Fiberglass Tray Co. ..... —
Monstanto Chemical Co.
Organic Div. ..... —
Plastics Div. ..... —
Mt. Hope Machinery Co. ..... —
Muehlstein, H., & Co., Inc. 435

National Aniline Div. 379
National Chemical & Plastics Co. 465
National Forge & Ordnance Co. ..... —
National Rosin Oil Products, Inc. 469
National Rubber Machinery Co. ..... —
National Sheradizing & Machine Co. 472
National-Standard Co. 346
Naugatuck Chemical Division
U. S. Rubber Co. 384
Neville Chemical Co. .....Third Cover
New Jersey Zinc Co. ..... —

Oakes, E. T. Corp. ..... —
Ohio-Apex Division
Food Machinery and Chemical Corp. ..... —
Olin Mathieson Chemical Corp. 356
Olin, R. R. Laboratories 470
Oronite Chemical Co. 444

Pan American Chemicals 441
Parsons-Plymouth, M. W., Inc. 457
Pasadena Hydraulics, Inc. 463
Paterson Parchment Paper Co. ..... —
Pennsylvania Industrial Chemical Corp. 353
Pequanoc Rubber Co. 378, 470
Phillips Chemical Co. 332
Pittsburgh Coke & Chemical Co. 357
Pittsburgh Steel Co. ..... —
Polymel Corp. 358
Polymer Corp., Ltd. 373
Progressive Service Co. ..... —
Pure Carbonic Co. ..... —

Rand Rubber Co. ..... —
Randall, Frank E., Co., Inc. ..... —
Rare Metal Products Co. 469
Reliable Rubber & Plastic Machinery Co. 472
Revue Générale du Caoutchouc 471
Rhodia, Inc. 457
Richardson, Sid, Carbon Co. 474
Rotex Rubber Co., Inc. 467
Royle, John, & Sons 461
Rubber Corp. of America 439
Rubber Age Books 380
Rubber Age Circulation 449

St. Joseph Lead Co. ..... —
Scott Testers, Inc. 445
Servel, Inc. 363
Sharples Chemicals, Inc. .....Insert Following 364
Shaw, Francis, & Co., Ltd. ..... —
Shell Chemical 364
Shell Oil 349
Shiraishi Kogyo Kaisha, Ltd. 469
Simplex Cloth Cutting Machine Co., Inc. 465
Skelly Oil Co. 362
Skinner Engine Co. ..... —
Snell, Foster D., Inc. 448
Solvay Process Division ..... —
South Florida Test Service 470
South Texas Tire Test Fleet 465
Southeastern Clay Co. 451
Southern Clays, Inc. ..... —
Spadone Machine Co. 469
Stamford Rubber Supply Co. 453
Stanley Electric Tool Div. ..... —
Stauffer Chemical Co., Inc. 345
Stoner's Ink Co. 469
Sun Oil Co. 437

Tapper, William 472
Taylor Instrument Companies 338
Taylor-Stiles & Co. ..... —
Textile Proofers, Inc. 442
Thiokol Chemical Corp. ..... —
Thomaston Mills 451
Thropp, William R., & Sons, Div.
J. M. Lehmann Co. ..... —
Titanium Pigment Corp. 342
Trade News Service 471

United Carbon Co., Inc. .....Insert Following 346
United Clay Mines Corp. ..... —
United Engineering & Foundry Co. ..... —
United Rubber Machinery Exchange ..... —
U. S. Rubber Co.
Naugatuck Chemical Div. 384
U. S. Rubber Reclaiming Co., Inc. 440
Universal Hydraulic Machinery Co. 471
Universal Oil Products Co. ..... —
Uitlity Manufacturing Co. 459

Vanderbilt, R. T., Co. ....Front Cover
Velsicol Corp. 368

Wallace & Tiernan, Inc. 359
Watson Standard Co. ..... —
Wellington Sears Co. 360
West Virginia Pulp & Paper Co. ..... —
Western Supplies Co. 340
White, J. J., Products Co. ..... —
Whittaker, Clark & Daniels, Inc. 447
Williams, C. K., & Co., Inc. 372
Witco Chemical Co. .....Insert Following 374
Woloch, George, Co., Inc. 468
Wood, R. D., Co. ..... —

HUGHES PRINTING CO.
EAST STROUDSBURG, PA.

...caught off guard

Unless you take advantage of modern developments and opportunities to secure better materials at lower cost you are likely to get caught off guard. If you have not already done so, it will pay you to investigate **TEXAS 109**, the new super abrasion channel black which gives the compounder these plus features at HAF prices:

FAST CURE—ph 9 plus

ULTIMATE TENSILE—Superior to channel black in both natural and GR-S

ELONGATION—Superior to channel black in both natural and GR-S

CRACKING—Equivalent to HAF in GR-S

ABRASION—Equivalent to ISAF in LTP and GR-S

. . . All this at HAF prices . . .

TEXAS CHANNEL BLACKS ®

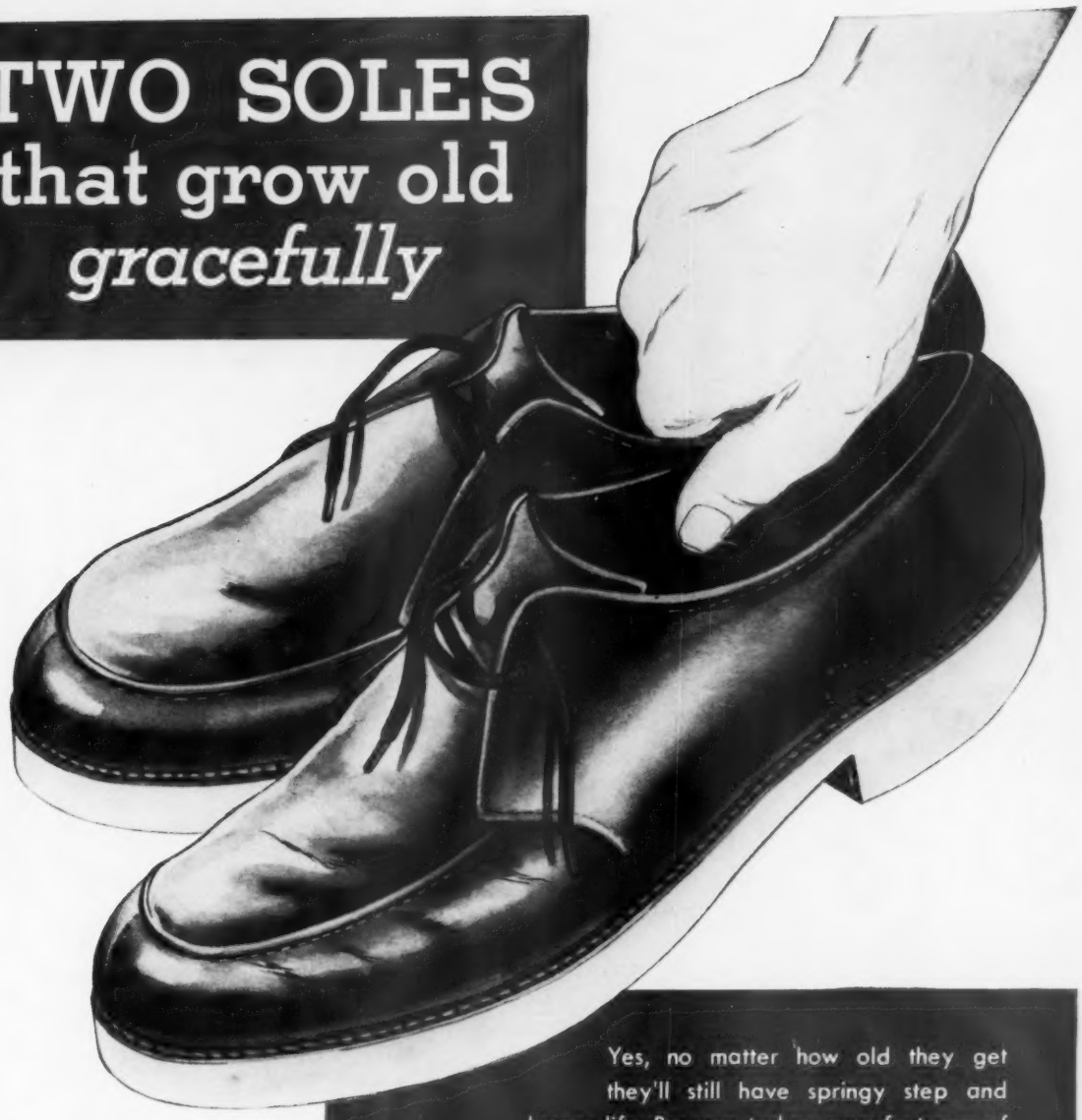
Write, wire or telephone for samples and information.

Sid Richardson CARBON CO.

FORT WORTH, TEXAS

GENERAL SALES OFFICES
EVANS SAVINGS AND LOAN BUILDING
AKRON 8, OHIO

TWO SOLES that grow old *gracefully*



Yes, no matter how old they get they'll still have springy step and longer life. Because today, manufacturers of quality footwear use Neville Resins in compounding synthetic soles and heels, thus improving the properties of their product. They get abrasion resistance, flex-life, high tensile strength and uniform quality in the stock they use.

- *These advantages are obtainable with Neville Resins in processing other rubber products too, such as molded goods, mats, floor tile, wire insulation and mechanical goods in general!*

NEVILLE RESINS

Call us for samples and information

NEVILLE CHEMICAL CO.

PITTSBURGH 25, PA.

Plants at Neville Island, Pa. and Anaheim, Cal.

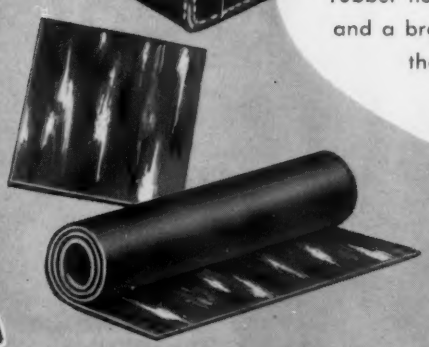
R-54

In Heavy Loaded Compounds . . .

PICCOLASTIC G-100

THE NEW POLYSTYRENE-TYPE RESIN

Gives HIGH HARDNESS • IMPROVED FLEX
HIGH TEAR RESISTANCE • GREATER ELONGATION
***and* LOW COST**



This NEW PICCOLASTIC G-100 has been specially developed to meet requirements for high hardness, improved flex, hot tear strength and greater elongation in heavy loaded compounds of synthetic or natural rubbers . . . It is light in color and desirable in the improvement of physical properties in light colored stocks . . . PICCOLASTIC G-100 will be found useful in the manufacture of rubber floor tile, soles and heels, rubber-type leather substitutes and a broad range of other rubber materials compounded with the GRS series or natural rubber . . . It can be supplied in flaked or solid form — and is moderately priced.

Write for bulletin giving complete data.

MANUFACTURED BY
PENNSYLVANIA INDUSTRIAL CHEMICAL CO.

HARWICK STANDARD CHEMICAL CO.

60 South Seiberling Street, Akron 5, Ohio

Boston 16, Mass. 661 Boylston Street
Trenton 9, New Jersey 2595 E. State Street
Chicago 25, Illinois 2724 W. Lawrence Ave.
Los Angeles 21, Calif 1248 Wholesale Street
Albertville (Ala.) Old Guntersville Hwy.

39th Year

Rubber Age

COVERING THE MANUFACTURE OF RUBBER AND RUBBERLIKE PLASTICS PRODUCTS

JULY 1955

In This Issue

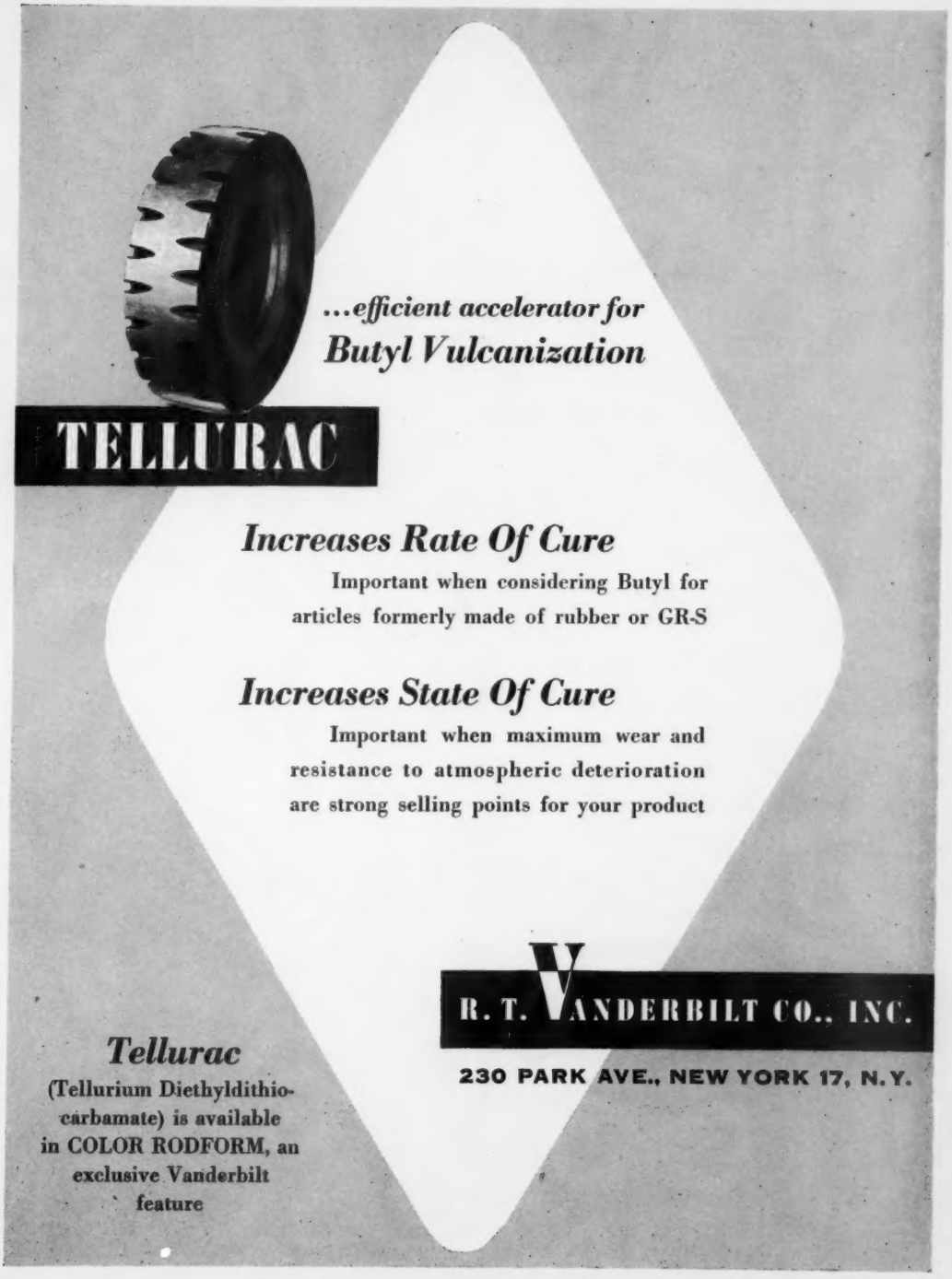
Is there an acceptable definition for hardness? ....page 543

How Goodrich boosted tire production by over 20%..page 549

How tensile strength of vinyl films can be improved...page 551

Curing of saturated fluorocarbon elastomers.....page 559

Contents.....page 485


...efficient accelerator for
Butyl Vulcanization
TELLURAC
Increases Rate Of Cure
Important when considering Butyl for articles formerly made of rubber or GR-S
Increases State Of Cure
Important when maximum wear and resistance to atmospheric deterioration are strong selling points for your product
Tellurac
(Tellurium Diethyldithiocarbamate) is available in COLOR RODFORM, an exclusive Vanderbilt feature
R. T. VANDERBILT CO., INC.
230 PARK AVE., NEW YORK 17, N.Y.